GAS

ENGINEERING • UTILIZATION • LOAD-BUILDING • MANAGEMENT

APR 27 1943

Dessert for the Axis

Folks working at our Robertshaw Thermostat plant are pretty busy these days cooking up a little dessert for the Axis—their "just desserts," if you know what we mean. Such indigestible little items, for instance, as hand-fuses for hand-grenades and primers, and ignition cartridges for rockets. Then there are boosters and shells and delicate but vital precision instruments for airplanes — just what our boys need to dish out the right kind of dessert for Tojo, Mussolini and the smaller fry at Hitler's table.

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For High Achievement in the production of war equipment.

ARMY E NAVY

ROBERTSHAW

ROBERTSHAW THERMOSTAT CO., YOUNGWOOD, PA.

From today's research and planning will come the EMCO Meters and Regulators of tomorrow

Generals Plan Tomorrow's Battle While Winning Today's

ON the far-flung battle fronts of the World, brave United States Soldiers, Sailors and Marines are being directed by military strategists in waging the most scientific war ever fought. This is a war of men and machines. Weighted in our favor is the fact that our machines are products of the same industrial ingenuity that has made America the greatest nation of them all—the men who use them are those who, both by heritage and training, will provide the skilled hands to guide the way to ultimate victory.

Planning ahead is important. Sooner or later the war will end and the Gas Industry and the manufacturing firms who supply equipment must be prepared to meet the changed conditions and ensuing problems that the cessation of hostilities will bring.

That we may keep to the forefront of progress, the research and development program of the Pittsburgh Equitable Meter Company and Merco Nordstrom Valve Company has been greatly accelerated. Our postwar planning is beyond the formulative stage. To be sure, the war must first be won, and to this end the productive capacities of our plants are now devoted, but like generals, industry, too, must plan for tomorrow's battle while winning today's. We all must take steps to insure that the things for which we are fighting will be perpetuated in a better peacetime world to follow.

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Nineteenth Year of Publication

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GUEST EDITORIAL

Performance Is All That Really Counts

By BURT R. BAY

Chairman, Natural Gas Section, American Gas Association*

PROMISES too often are fruitless—performance, in these critical days, is all that really counts. It takes tangible form as production, and production adds up to guns, tanks, planes, ships, and ammunition needed to beat the common enemy. Performance doesn't necessarily mean a temporary upsurge to new heights with the let-down that invariably follows—it doesn't have to be something spectacular, accompanied by the blowing of horns or ballyhoo. It may well be and often is evidenced by day in and day out constancy of purpose that reflects itself in the desired ultimate result, achievement.

To the credit of the natural gas industry it may be said that it has been guarded in its promises, carefully avoiding commitments it could not carry out, yet all the time moving forward, carefully and methodically, to new records of achievement. Early in the stages of preparation for war, the men who guide this industry accepted the challenge of war. Recognizing all that the successful prosecution of war meant to humanity and therefore would require of a great industry, they applied themselves to the tremendous task ahead. They went about their work quietly and without ostentation — planning every move — making the fullest use of the limited materials at hand — meeting and overcoming, many times by sheer ingenuity, the obstacles that beset progress, always determined to move more and more of this valuable product to points of consumption where it might be put to work in the thousands of operations now dedicated to the common cause—the winning of the war.

Proof of this spirit abounds in the natural gas industry's record of constantly increasing volume of war industry sales. This record discloses that more than 60% of all the natural gas sold is used by industry and that the gains of recent months are substantially all reflected in increased use by industries engaged in war work. A detailed analysis of such sales would serve to convince the most skeptical of the versatility and flexibility of this wonder product of nature's storehouse, and its ready adaptability to the processes of war manufacturing. The record is one that the industry may be proud of. It is truly one of performance—the sort of performance that creates good will and makes for the feeling of dependability in the minds of the consuming public.

So much for the past war record of the natural gas industry. Today's problem is what of tomorrow? Surely and certainly there is but one acceptable course open—to go forward—in such respect let us observe that these same men, who have so successfully guided the natural gas industry through the war period to date, will not be content to stand on the records of the past. Whatever the obstacles may be that would hinder making a still greater contribution to the war effort, some way will be found to overcome handicaps and provide additional quantities of natural gas when and where needed. That is history repeating itself—it is the spirit of the men who made this industry — it is the American way.

*Mr. Bay is president of the Northern Natural Gas Co. of Omaha, Neb.

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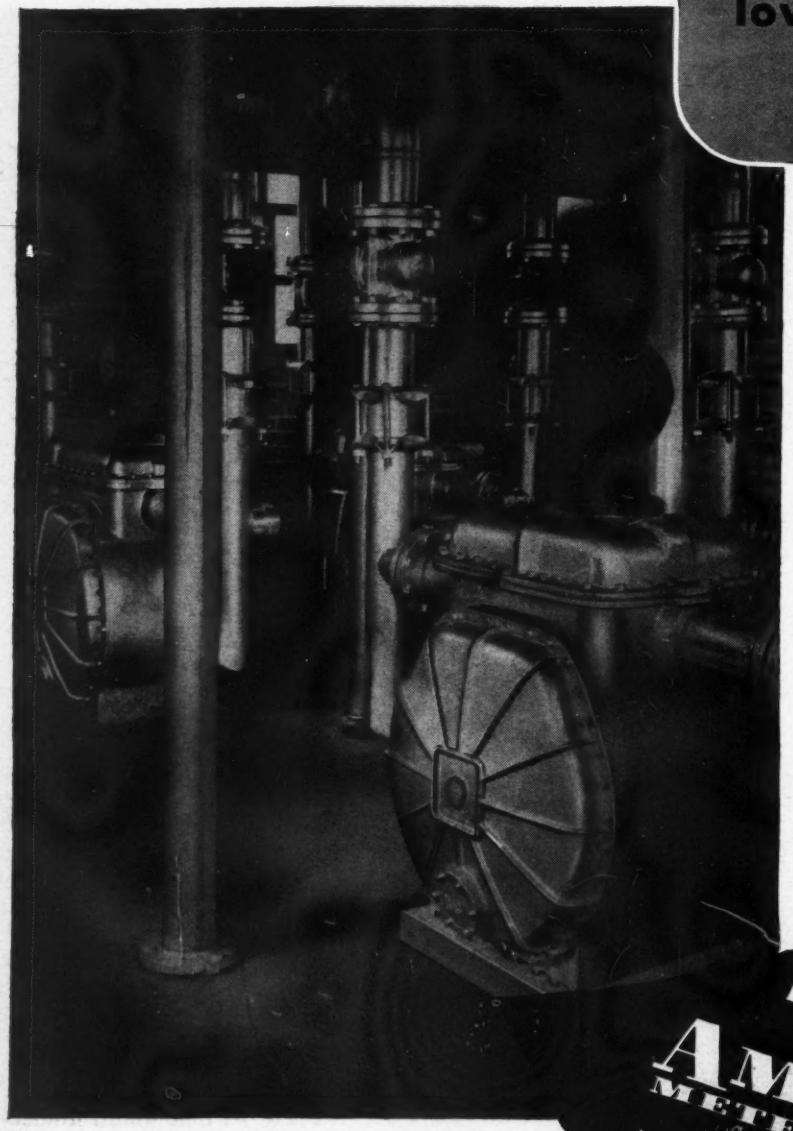

● Showing three of the four master meters (Metric-American 500-B Ironcase models—equipped with Metric Volume and Pressure Gages) inside meter house of a prominent low cost housing project.

● **Long-life meter accuracy and stamina, are carefully considered economy factors in this installation at a newly completed FHA low cost housing project in a large Southern city. In peace and wartime economy, the space saving, rustproof METRIC-AMERICAN Ironcase contributes to low cost gas service for thousands of industrial and other large-volume users of gas.**

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THERMALLY THINKING

By ELLIOTT TAYLOR, Washington Editor

The Heavier Burdens That Are To Come

THE Natural Gas Management Conference, meeting in Cincinnati this month, is scheduled to be addressed by two representatives of government—by J. A. Krug, director of the Office of War Utilities, WPB, and E. Holley Poe, director of the Natural Gas and Natural Gasoline Division, PAW. Since from a practical standpoint these two men represent the last word in direct wartime authority over the natural gas industry, anything that they may have to say may be regarded as being as close to final as any pronouncements can be final in this period of uncertainty and change.

Elliott Taylor

We have no doubt that each will take occasion to congratulate and commend the executives for the cooperation that has existed between the gas industry and the authorities directly responsible for its role in the war effort. This in a large measure because such cooperation has existed and also because it is the expedient and politic thing to say. Although armed with all of the authoritarian power in the world, no government and no branch of government can exact any more from an industry than that industry can be persuaded to give. It is for this reason that one of the major preoccupations of all propagandists is the study of the degree to which their promulgated versions of the passing state of affairs are being accepted as the truth.

Looking back briefly over the first full winter of all-out war conditions, we can see ample justification for any slight tendency toward self-congratulation that OWU, PAW or the natural gas industry might feel disposed to entertain. Armed with the factual information on the availability of supply that was carefully but expeditiously compiled by PAW, the WPB was able to anticipate early in the fall the probable extent and location of gas shortages during the winter months. With construction of new transmission facilities out of the question, for obvious reasons of both time and materials, a program of conservation and curtailment was worked out that required for its success the fullest measure of cooperation on the part of the operating companies in the principal shortage areas — eastern Kansas and the Appalachian regions. The details of the techniques employed have been well enough publicized to require no recounting; but the end product from a national standpoint was that on the industrial side there was no loss in production of prime war materials, and of all the millions of residential consumers of natural gas less than 400 homes were out of gas completely, and only for a period of about a day and a half. Demonstrated to the gas industry was the fact that intelligent understanding of gas problems could be found outside the ruggedly individualistic heads of operating companies, and to both government and the public that consumers on the lines of the gas utilities were both amenable and cooperative to requests for conservation coming from the individual companies that serve them.

Production Must Be Expanded

If the war were already won, we might be inclined to luxuriate a little longer in our contemplation of a good job, well done, to date. But those whose business it is to know, assure us that we have only started on the major phase of the struggle—which rests its hope and confidence on the utilization of the arms and equipment that our national plant has been building to produce. Ahead of us lies the task of a continuing and always expanding production of the expendible supplies and materials that the mounting conflict will demand. It is for this reason that war emergency representatives will stress, just as the industry in its own sober judgment will recognize, that executive deliberation can only concern itself with the problems of the future, and to a very large extent primarily with the problems of the immediate future.

A Matter of Executive Capacity

Paradoxical though it may sound, we believe that right now, more than at any time since the war started, the affairs and the direction of the gas industry are in a fair way to be left in the industry's own hands, provided only that its own executives show themselves capable of grasping the broadest implications of such an opportunity with its attendant responsibilities.

Regardless of what may have been errors of either judgment or expediency in the past, we are convinced that there now exists in both PAW and OWU a realistic understanding of gas problems that transcends the viewpoint of any operating head preoccupied as he must necessarily be with the affairs of his own particular enterprise. Yet there is no tendency either to disregard industry executive capacity on the one hand, or to summarily guide it by directives on the other. We do not believe for a moment that this coincides with New Deal philosophy any more today than it did before Pearl Harbor. It is rather more a recogition that New Dealism, the great socio-economic whatisit that once proudly proclaimed itself as all things to all forgotten men, has discovered that the resounding intangibles in which it once traded cannot be substituted in their entirety for

the material things that are required when once it has been decided to meet force with force.

The opportunity and the challenge to natural gas executive capacity cannot, then, be said to have abated. On the contrary it is only now destined to manifest itself in its fullest implications. It is now commonly known that some new steel will be available for the construction of additional transmission facilities. The major projects, to relieve the Appalachian and the eastern Kansas shortage areas, are now assured. No doubt others under consideration will receive full or partial approval. There is probably not a major company in the industry that could not handily use from a few tons to a few thousand tons of new pipe to add to their overburdened transmission capacity. Yet only a few will be able to justify the use of critical material for this purpose between now and the snows of next winter. Who is to be given approval for new construction, what producers' gas is to be carried, and where and how it is to be allocated to market areas all are questions that will have to be answered by someone.

Whether it will be the industry or government that supplies the answers to these questions will rest on the gas industry itself. Discipline and self-denial are terms that many executives regard as applying only to the rank and file of their junior employees, yet discipline and self-denial of individual and corporate ambitions must be exercised if any agreement on recommendations is to be found among concerns with competitive interests that normally would have to be safeguarded. There must be protection of interests at both ends of any gas system—protection of the rights of all producers and protection of the rights not only of the marketers but of the markets themselves.

Planning for expansion that has always been in terms of gas systems in the past, must be enlarged in scope to become planning for whole gas areas; and the utilities serving any single area must be prepared to regard any territory or market as one unit in a complex national fuel problem. Getting the maximum amount of gas to the point of its most effective utilization in the war effort must totally eclipse any minor concern over who is to be permitted to supply it. If the amount of gas allocated for delivery to any one company is not sufficient to justify new transmission facilities, then jointly owned or operated lines must be built by all who stand to benefit by their construction. The alternative may well be government owned and operated lines with all of the implications of post-war possibilities that such ownership conjures up.

Where new major transmission facilities cannot be considered for the present, there will be new demands for the more complete integration of systems and supply. Legalistic corporate and financial barriers to the transfer of gas from one system to another must be eliminated. Where shortages occur or are likely to occur, the industry itself should have already explored the lowest cost method (in terms of critical materials) of putting additional gas into the areas affected. The only alternative is that of directives and more directives handed down from the political Olympus of Washington.

A painstaking and always skeptical survey of the Washington attitude leads us to the further conclusion that great service could be done both the gas industry and the war if utility executives would abandon as a group any lingering tendency that they may have to cry on the shoulders of patient but unimpressed government officials. There can be only one valid objection to any war measure, and that is that it does not or will not contribute to the war effort in the manner anticipated. To such an objection, backed up by the facts that only those in the industry can produce, there should always be prompt official recognition. We are convinced that as far as PAW and OWU are concerned that recognition will continue to be readily forthcoming. Complaints of the impairment of personal interests or private fortune were invalidated when the first draftee was told to report for induction into the armed service of his country. And they can have no validity until the last survivor of the struggle has been returned safely home.

In all justice, representatives of the governmental agencies may well congratulate and commend natural gas management for the accomplishments that it has made to date. In all modesty, management may accept as earned any encomiums that may be delivered. But on the shoulders of natural gas management the burden must yet rest heavier before it can become lighter. To a degree that is greater than that which prevails in most industries of the nation, the affairs of the natural gas industry are in the hands of its own executives and its friends. Only the unremitting diligence and foresight of its present management can insure that they will remain there.

How London Gas Men Met The Blitz

ONE of Mussolini's macaws, broadcasting over the Rome radio Oct. 7, 1940, about the then current air blitz on London, said, "Traffic in the city appears to be completely interrupted; and from the number of fires in gas and water works, the public services must have ceased to function." This is one of Musso's earlier many misses, for little as he knows about anything, he knew even less about the indomitable spirit of our British allies and gas industry colleagues.

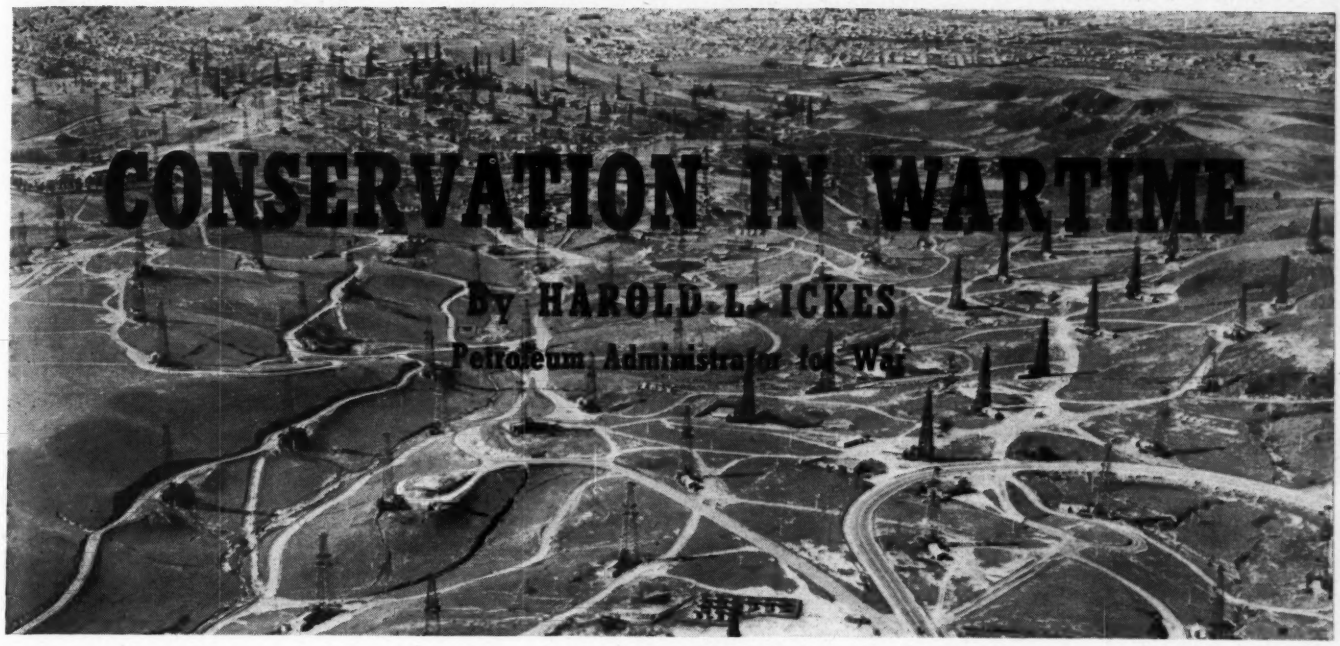
The story is told in "Front Line," the British government's official publication covering the home front during the air blitz on London. The British government pays a well-earned tribute to the London gas men who, despite bomb, fire and lurking death, fearlessly carried on, come hell, high water or Hitler himself.

Describing the inferno that raged in the city while the Luftwaffe poured into it all it could, "Front Line" adds:

"When a gas main was broken and set alight, and the great unquenchable swaying columns of fire roared upwards above the roofs of the nearby houses, there were—very properly—no admiring Londoners to applaud that old acquaintance, 'the man from the gas company.' He worked in the muddy crater, in the scorching poisoned air, to plug the end of the main, or forced his way past blazing debris to reach a valve and cut off the supply. Nor were his problems confined to the streets.

A gas works is one of the extreme danger spots under heavy air attack. It is interlaced with huge pipes carrying explosive mixtures—tar, benzole, and gas itself; and it is dotted with holders of the largest size. Any incendiary may instantly start a great blaze, and the destructive power of a high explosive bomb is multiplied by what it strikes. To repair a flaming splinter hole in the crown of a gas holder in an air raid, 60 ft. up, and with millions of cubic feet of gas below you, is a hazard as great as any in civil defense. It was done many times. Most of the London gas works were hit, some very often. Every incident meant extreme risk for the men who dealt with it. In London 179 of them were decorated."

As we go to press, we have no report whether the Berliners are still cooking with gas, but if so let's hope it is Goering's goose.



CONSERVATION IN WARTIME

By HAROLD L. ICKES
Petroleum Administrator for War

I APPRECIATE this opportunity to renew my association with the members of the natural gas industry of this country.

On May 6 of last year when I talked to you in New Orleans at the annual meeting of the American Gas Association, we were just organizing our Natural Gas and Natural Gasoline Division to represent your industry in what was then the Office of Petroleum Coordinator. Just about a year has passed since that time—a year in which I have learned that the gas industry can and does give government the same high degree of cooperation that its cousin, the oil industry, has given in times of crisis. The gas industry and the government can pull together toward the common goal of winning this war as effectively as the oil industry and government have pulled together in dealing with problems related more directly to petroleum. The conservation of one of this nation's greatest natural resources to meet the strain of war achieved by our joint efforts during the past 12 months is a striking demonstration of my point.

For a long time I have believed that our natural resources should be developed and used in a manner calculated to bring the greatest benefit to the basic owners of these resources, the American people. This belief constitutes an unshakable foundation on which to build my approach to the problems of the natural gas industry during wartime.

Natural gas has been a traditional source of fuel energy to heat our homes and power our factories. Today natural gas has a dual job—as a fuel and as a source of vital hydrocarbons for direct utilization in the manufacture of war products—for our super aviation fuel, for butadiene as a constituent of synthetic rubber, for toluene as an explosive to smash into infinity the mongrel hordes of Hitler and Hirohito.

If these are the uses and potentialities of natural gas in wartime, then the conservation of this resource—and by this I mean its most effective over-all wartime use—becomes a grave responsibility of government as well as the gas industry.

HAROLD L. ICKES
Secretary of the Interior

A quick look at certain of the basic statistics with respect to natural gas will emphasize this. We are now producing some three trillion cu. ft. of natural gas per year. This is just double the amount produced only 10 years ago and the top is not yet in sight.

New uses for this convenient fuel and raw material arise daily. From the cornucopia of gas will come one-third of our emergency production of synthetic ammonia, many pounds of furnace black to go into the production of synthetic rubber, and increasing quantities of raw material for aviation gasoline.

Your customers are nine millions of American people and in many areas the number of military men and defense workers to be served is still increasing. In other words, yours is an industry in which production is in the trillions and customers in the millions.

The job of Petroleum Administration for War is to work with you in prescribing those measures and regulations which will insure the conservation of this fuel in the production branch of your industry. Another government agency is charged with responsibility for matters relating to the transportation and distribution of your product. To the extent that two governmental war agencies are concerned with your activities, you have a more complicated problem of cooperation with government. But I am convinced that your capacity for cooperation is no less than your capacity for full recognition of the nature of the problems that confront you.

In Washington and elsewhere, peo-

ple, uninformed and unaware of all of the rough spots on the road ahead, believe that we are over the hump so far as oil and gas supply problems are concerned. Since the production of natural gas is so closely related to the oil industry; since, in fact, fuel oil and burner oil perform many of the same functions as natural gas; since the fighting fuels such as high octane gasoline and the destructive hydrocarbons similar to those that make toluene can be obtained from both oil and natural gas, the situation with respect to our oil shortage is closely related to the supply and distribution of natural gas.

Since you are so concerned, let me take this opportunity of advising you, as I have others, that we are a long way from being over the hump in this phase of our battle for energy resources. Restrictions upon non-essential uses will continue to be necessary until we have a more ample supply above military and essential civilian uses.

The job of the oil and gas industries is not yet done, nor is government's task completed. We have ahead of us an indeterminate stretch in which we must keep our forces joined in order to achieve a common objective.

I shall always be grateful for the cooperation that you have given us. A year ago when I solicited your help, my request was granted. I know that at any time in the future I shall be able to tell the American people, on behalf of both of us, that, in so far as throwing all of our natural gas reserves into the war, you have done a top-notch job.

The Gas Industry
MEETS THE CHALLENGE OF WAR

By ERNEST R. ACKER

Chairman, AGA Committee on War Activities

THE gas industry is today a vital part of the greatest public effort that has ever been organized and maintained in this country. The industry's relationship to this effort is one of high responsibility as a necessary unit in a complex social, military and industrial structure dedicated to the preservation of freedom and the suppression of slavery throughout the world. In this sense our former concepts of public relations are dwarfed by the responsibilities and opportunities of the present.

The industry is fulfilling its obligations and meeting its public duty in a manner which has continuously won the commendation of governmental agencies and has clearly demonstrated the ability of the industry to adapt itself quickly to new conditions and to face emergencies with courage and resourcefulness.

Much has been said of the remarkable accomplishments of our manufacturing industries in changing overnight from peacetime to wartime production. In this connection, I am impressed by the following quotation from the annual report to stockholders of one of the New England companies:

> "The accomplishment of the tremendous task of converting industry from peacetime to war production quite naturally attracted wide attention and acclaim. As a stockholder in this company, you may have wondered why it was that the gas and electric industry shared in this public glory to a very minor degree. The reason is, of course, that your company, in common with most utilities in the country, was already prepared to meet increased demands for power and gas when our nation entered the war. There is nothing very spectacular or dramatic about being prepared and, therefore, the press and the public paid scant attention to the utilities. However, we take pride in the fact that we were prepared and that little of the industrial expansion could have been accomplished without adequate electricity and gas."

I am satisfied that this statement applies to the gas industry generally and that any limitations now placed upon supply come as a result of material and transportation shortages for which the gas industry is not responsible.

The war activities of the gas industry are kaleidoscopic in nature, ranging from questions of materials and supplies, production capacity and manpower to questions of conservation, curtailment, nutrition, etc., and even of whether the industry should mobilize its resources to promote the victory garden idea! New questions and new problems arise daily requiring analysis, consideration or review by competent and qualified groups. Many of these matters are referred to the American Gas Association's Committee on War Activities which acts as a clearing house in routing them to the proper committee for consideration, in receiving recommendations and in taking such action as may be required in each particular case.

In this work the committee has had the full cooperation of all sections of the association, and has depended to a great extent upon the able assistance and guidance of Major Forward and his headquarters staff who are largely responsible for anything which may have been accomplished. Any success which we have had to date is only the result of the coordinated effort of many individuals who have given freely of their time and ability in meeting the demands of the war situation. I consider my present assignment as a great opportunity and can only hope that any personal contribution which I may make will live up to the needs and expectations of the industry.

Functions of the committee: The function of the Committee on War Activities is to consider all matters relating to the war effort and to take such action as will assure the greatest possible contribution to the prosecution of the war with the minimum dislocation of the essential services of the industry to its customers. In this connection the committee has been called upon to represent the industry in various discussions with governmental agencies, and has been continuously impressed with the consideration which it has received on all matters relating to our common purpose.

The industry is extremely fortunate in the high caliber of the personnel of the War Production Board assigned to handle gas industry problems and may rest assured that no action will be taken without complete review of all pertinent facts and a full opportunity for presentation of the industry viewpoint.

The most recent example of the pro-

cedure adopted by the Manufactured Gas Division of the Office of War Utilities is in the prolonged discussions of the proposed substitution of low grade gasoline for heavy oils now used in water gas production. This proposal, advanced some months ago by the Office of the Petroleum Administration for War, held such far-reaching implications for the gas industry that it became the immediate concern of officials of the War Production Board charged with the responsibility for the maintenance of adequate gas service for war industries and the civilian population.

As a result of the efforts of officials of the Manufactured Gas Division of the Office of War Utilities, and the Natural Gas and Natural Gasoline Division of the Petroleum Administration for War, the gas industry was given a full opportunity to present its case and to review the effect of the program on its operations, with all of the governmental agencies involved. Representatives of the gas industry were advised of the desperate situation in District 1 with respect to heavy oils and were asked to examine with governmental agencies the possibility of relieving the situation by using surplus gasoline available in Districts 2 and 3 in place of heavy oils urgently needed by the navy, merchant marine and other war industries. In these discussions, representatives of the industry have stressed particularly the extreme hazard involved in storing and using gasoline in existing water gas plants. In addition they have pointed out the great economic loss involved in adopting such a program.

Heavy oil use: The water gas companies in District 1 use approximately 5% only of the heavy oil used in that district, and have continuously urged that readjustment of oil production at the source or conversion of other industries to gasoline could be accomplished with much less economic loss than in the case of the gas industry.

Data setting forth the position of the industry have been presented to governmental agencies in Washington, and the proposal of the Petroleum Administration for War that gasoline be substituted for present enrichment oils used by companies manufacturing water gas in District 1, has been deferred indefinitely, according to government officials. While the question has been eliminated for the near future, companies in that area are asked to continue supplying data already requested by the committee on war activities of the American Gas Association.

Gas meter repair order: War Production Board Order M-43-b restricts the use of tin solder for the repair of gas meters, and confusion has resulted in some states because of the conflict between the provisions of this order and those of existing orders of state regulatory bodies. In many states amendments to existent regulations have already been adopted to avoid such conflicts. In other states, however, the question is still undecided, and gas companies are at a loss to reconcile the requirements of the federal order with those of their state commission.

At the request of the Committee on War Activities, the AGA Technical Section is now conducting a survey of the action taken by state commissions throughout the country and this survey will shortly be available to member companies. In most states existing regulations require periodic meter tests on less than a 12-year cycle and prescribe limits of accuracy considerably narrower than those contained in the federal order.

In some states no meter may be reinstalled on a customer's premises without the index having been set back to zero, so that even though the meter may test within the limits of accuracy required, it cannot be put back in service without having the top removed, the index adjusted and the top resealed. Strict adherence to the regulations of the War Production Board and to those of the state commissions will in many cases result in the accumulation of a large stock of unrepaired meters and the early exhaustion of existing stocks of available meters.

Recent discussions with representatives of the Tin Branch of the War Production Board indicate that the 4% accuracy limitation will be maintained and that the War Production Board will not take jurisdiction over the removal of meters from service. For this reason, constructive action by state commissions is imperative.

ERNEST R. ACKER

One of the member companies of the American Gas Association has filed an appeal with the War Production Board covering the repair of meters that are mechanically defective, and the committee is advised that favorable action will probably be taken in the near future. Three companies have filed appeals requesting permission to be allowed to continue their regular schedules of meter repair with the understanding that no tin solder would be required other than that recovered from meters brought in for repair. In two cases the appeal was granted, and in the third no action has been reported as yet. It is possible that a general amendment to the order will be made to cover such situations. In all three of these cases it has been the practice of the companies in the past to use a tin solder having higher than the usual 50% tin content.

Critical materials study: Some of the more interesting activities are those having to do with critical materials. We have recently been asked, for instance, for a firm estimate of the amount of cast iron and steel piping required by the gas industry during the 12-month period beginning July 1 of this year. These estimates are for use in the allocation of critical materials under the Controlled Materials Plan. Similar estimates have been requested covering the number of conversion burners that will be required to replace old burners during the next 12 months.

Many of these estimates must be made in a limited period of time, so that the basic information is assembled from data available at association headquarters and modified by a quick check with representative gas companies in order to conform it to current conditions. The cooperation of member gas companies in connection with these and other inquiries of the committee has been outstanding.

It is an ill wind that blows no one good, and some of our competitors have used the present shortage of critical materials as an opportunity to discredit the gas industry's services, particularly in the residential field, as constituting a waste of iron, steel, copper, brass, and other critical materials.

In answer to this challenge and as a guide to governmental agencies and the industry in formulating gas service plans for housing projects, the association has recently completed "A Study of Utility Services for War Housing."

The advantages and disadvantages of providing housing projects with cooking, refrigeration, water heating, and house heating services with various combinations of fuels and in accordance with "War Housing Utilities Standards" are fully discussed and clearly disprove allegations that gas service is wasteful of critical materials.

As an outgrowth of this study, the association is now investigating the possibility of utilizing non-metallic substitutes for main and service extensions in connection with war housing projects. This investigation has been undertaken at the request of governmental authorities with the thought that such extensions could be installed at government expense and abandoned at the end of the war. One non-metallic material which appears to offer particular promise, at least on a temporary basis, is now being tested with the cooperation of the gas companies in Pittsburgh and Washington. The use of such materials would obviously improve the position of gas service from the standpoint of weights of critical materials required.

Gas conservation: In compliance with requests of the federal government, the gas industry has made an outstanding record in promoting the conservation of gas as a vital fuel, and the curtailment of gas usage in areas of critical oil shortage. The conservation and curtailment advertising programs prepared at association headquarters have been utilized by a substantial portion of the gas industry, and the activities of the industry in this regard have been commented on favorably by the governmental agencies involved. The sales records of the gas companies which have cooperated in these programs indicate in most cases that the consumption of residential and house heating customers has been materially reduced after giving consideration to degree day differences. In some cases consumption has remained at previous levels, other influences to the contrary, while in only a few cases consumption has increased.

In this connection it seems obvious that neither the gas industry nor the government can expect that the total consumption of gas per customer can in all instances be reduced through such campaigns. It must be borne in mind that many more people are cooking at home than in the past, and that the government programs directed to the canning and conservation of foods, the improvement of nutrition and the doubling up of families in housing shortage areas, all operate to increase consumption per customer in spite of conservation programs. Under the circumstances, an over-all reduction of 10% in combined residential and house heating usage is considered by some governmental representatives as indicating a satisfactory response to the conservation program.

In the final analysis, I feel that the best that we can hope to accomplish is to influence each customer to utilize the minimum amount of gas necessary for his individual needs, whether they be cooking, refrigeration, water heating or house heating, bearing in mind always that if these operations were carried on by any other means, more oil or more equipment would be required than is used at the present time.

House heating conversion: Shortly before the first of the year the association received a communication from the Office of the Petroleum Administration for War, suggesting that the gas industry undertake a campaign to persuade its house heating customers using conversion burners to convert their heating plants back to the use of coal. A detailed analysis of this question indicated that the average consumption per gas house heating customer in the Atlantic Seaboard states was 241,000 cu. ft. annually, and that of this average consumption 141,000 cu. ft. represent the portion produced with water gas. This average consumption requires approximately 500 gal. of oil annually for each gas house heating job, while the average residential oil burner has an annual consumption of 2000 gal. of oil.

In replying to the suggestion of the Petroleum Administration, the association pointed out that it would obviously be necessary to convert four gas house heating customers to coal as against one oil burner customer, and that, in view of the additional expense, inconvenience and use of critical materials involved, the end would not appear to justify the means.

Although the oil industry has not to my knowledge solicited such conversion through advertising to its customers, the government has advocated conversions from oil to coal both in homes and in industry over a period of from 12 to 15 months. Industrial conversions to date represent a saving of approximately 100,000 bbl. of heavy oils daily and residential conversions numbering more than 100,000 represent a saving of approximately 15,000 bbl. daily. Comparable success in a voluntary gas conversion program would represent a saving of only 300 bbl. of oil daily. In spite of these facts, it is possible that this proposal will be presented again before the next heating season.

Conclusion: I have discussed only a few of the current war activities of the gas industry. Many others, including the salvage and exchange of materials, the administration and interpretation of Orders L-31 and L-174, the war protection of the gas industry, and the services which the association and industry have rendered to the Office of Civilian Defense and the Office of Strategic Services are no less important than those which I have reviewed. They are all essential to the effective prosecution of the war and are receiving the careful consideration and attention of highly competent committees and personnel of the industry. In most instances, however, they are less controversial than the matters which I have covered, and for lack of time may be relegated for the moment to cloakroom and after-dinner discussions.

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New "Death Sentence" Plan Devised by Standard Gas

A PLAN of recapitalization, long range integration and divestment which may develop into a nationally approved SEC method for dealing with holding companies subject to the "death sentence" clause of the Public Utility Act of 1935 has been evolved by the Standard Gas & Electric Co. of Chicago.

The Chicago company's plan sets a new approach to the holding company capital simplification and is the first proposal of its kind to be based on previously determined minimum values for securities to be exchanged for existing capital issues. The recapitalization problem has been the principal barrier in the path of holding company liquidation, in that holding companies have claimed that utility assets would have to be sacrificed at values far below their par to comply with the divestment features of the "death sentence," and that such values would not provide adequate coverage for the prior rights of the security holders.

The Standard Gas & Electric case will be heard at a public hearing on May 5.

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Oklahoma Gas Production Shows Increase During 1942

Natural gas production in Oklahoma in 1942 was estimated at 276,532,209,000 cu. ft., an increase of 6% over 1941, the conservation department of the Oklahoma Corporation Commission has revealed.

Greater demand for this fuel for industrial plants in the Southwest stimulated greater production in spite of increased difficulties in securing material and labor.

Oklahoma exported natural gas to 12 states in a total amount of 38,238,000,000 cu. ft. States to which gas was exported are Arkansas, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota and Texas. While Oklahoma was exporting gas, it also imported it from Kansas and Texas.

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Post-War Disposition Of Oil Pipelines

The Petroleum Industry War Council recommends that at the end of tanker emergency and/or at the end of the war, but not later than six months after the war, the Office of Petroleum Administration for War or its successor agency call into conference the petroleum industry in Districts 1, 2 and 3, to determine the disposition and future use of all oil pipelines built with government money.

NATURAL GAS FACTS FOR 1942

By HONORIA B. MOOMAW

Acting Secretary, Natural Gas Section, American Gas Association

ULTIMATE victory is dependent on America's ability to remain the "Arsenal of Democracy," and her ability to deliver the goods. American industry, therefore, is confronted with a mammoth task. Astronomical quantities of superior fighting implements must be produced and placed in the hands of those fighting the common enemies. To attain this end, cooperation must replace competition; industry must produce 24 hours a day, seven days a week. Bottlenecks must not occur for they are as damaging to the war effort as is deliberate sabotage.

One of the most potent weapons in this war is not forged in factories, nor does it take shape on the assembly line. It is the spirit burning within every individual—the determination to do his part, no matter how small; and his willingness to make any sacrifice, however great. This is "morale." It is an essential to the successful conduct of the war on the home front, and it is an attitude transmitted to those facing the guns of our enemies.

Industry and the civilian population are responsible, to a great measure, for the conduct of the war on the home front, and have an equal responsibility in the maintenance of a high degree of morale. The average man must remain certain that the world's greatest productive system is operating at full blast, and that the essentials to the everyday life of his family are still available.

A Vital Commodity

Where does the natural gas industry fit into this picture? Natural gas is a vital commodity in America's productive system—it is a force behind industry and an essential in numerous chemical processes. Too, it it a necessary service in almost eight million American homes.

The natural gas industry, since World War I, has skyrocketed from a comparatively small industry to its present proportions—an industry in which more than $2,500,000,000 of capital is invested. Such a rise is more than phenomenal, it is indicative of the type of efficiency that will win the war.

The natural gas industry has thrown all of its vitality behind the war effort. In itself, it represents a formidable army performing an essential service. The size and scope of this army are presented in the following statistics.

Including amounts used in the manufacture of carbon black and for field purposes, more than three trillion cubic feet of natural gas was produced during 1942.

Natural gas service is available in towns and cities with an aggregate population of approximately 37,000,000. The 8,467,400 customers connected to the mains, consumed 1,768,894,900,000 cu. ft. of gas, for which they paid $583,025,400. Detailed figures showing customers, sales, and revenue by classes appear in Table 1. It is interesting to note that sales of natural gas for industrial purposes during 1942 amounted to 872,287,400,000 cu. ft. This figure indicates an increase of 53,074,600,000 cu. ft. over the industrial sales for 1941.

In order to maintain the high degree of service to which both industry and the home have become accustomed, 198,800 miles of natural gas pipeline is utilized. Of this total, 88,400 miles are classified as "transmission and gathering" and the remaining 110,400 miles as "distribution." (See Table 2.) When we stop to consider that in many instances the point of consumption is hundreds of miles removed from the gas producing fields, we have additional evidence of the efficiency exercised in the maintenance of this "high degree" of service.

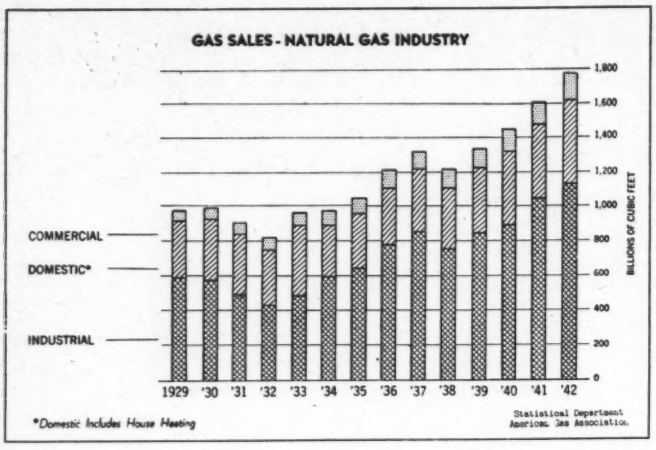
Conservation Essential

Increased demands to meet the needs of production have necessitated requests to the consumers of natural gas to practice conservation. However, the industry is resolved that every effort will be put forth to maintain its services. We realize that further dislocation in our business and the possible loss of some of the ground gained during recent years, might be encountered. This, however, should not be interpreted as a permanent development any more than should be the abnormal peaks which are being, and will continue to be, established

TABLE 1. NATURAL GAS INDUSTRY—CUSTOMERS, SALES AND REVENUE (1942)

	1942	1941	Per Cent Change
CUSTOMERS			
Domestic (including House Heating)	7,803,600	7,585,100	+ 2.9
Commercial	613,300	580,800	+ 5.6
Industrial	48,000	48,800	+ 2.6
Miscellaneous	2,500	2,700	—
Total	8,467,400	8,215,400	+ 3.1
GAS SALES (Mcf)			
Domestic (including House Heating)	476,199,500	422,199,700	+ 12.8
Commercial	154,512,200	130,103,900	+ 18.8
Industrial	872,287,400	819,212,800	+ 6.5
Electric Generation	232,766,700	202,989,700	+ 14.7
Total Industrial and Electric Generation	1,105,054,100	1,022,202,500	+ 8.1
Miscellaneous	33,129,100	28,128,400	—
Total	1,768,894,900	1,602,634,500	+ 10.4
REVENUE (Dollars)			
Domestic (including House Heating)	314,500,300	284,428,900	+ 10.6
Commercial	65,262,000	58,012,600	+ 12.5
Industrial and Electric Generation	198,383,200	179,586,000	+ 10.5
Miscellaneous	4,879,900	3,835,300	—
Total	583,025,400	525,862,800	+ 10.9

Statistical Department, American Gas Association.



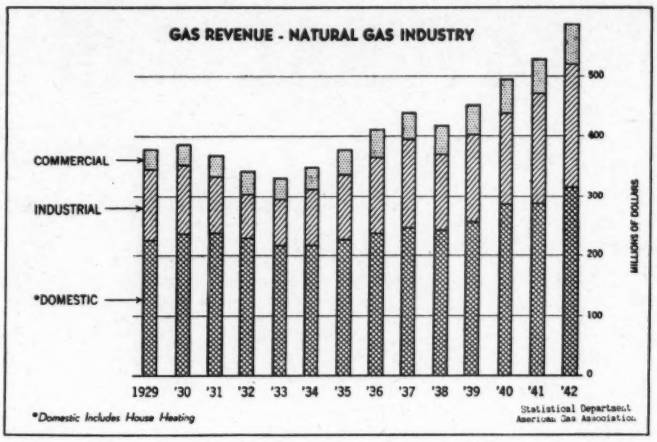


TABLE 2. MILES OF MAIN IN USE BY THE NATURAL GAS INDUSTRY IN THE UNITED STATES (1933-1941)

	1941	1940	1939	1938	1937	1936	1935	1934	1933
Natural gas transmission	88,400	87,900	85,200	83,400	82,000	80,900	80,100	79,300	78,700
Natural gas distribution	110,400	107,200	106,200	104,100	102,300	99,100	95,900	94,700	93,300
TOTAL MILES—NATURAL GAS	198,800	195,100	191,400	187,500	184,300	180,000	176,000	174,000	172,000

Statistical Department, American Gas Association.

by the increased tempo of the war.

Aside from executing our war jobs, we must take a long range view. The industry realizes that the present pace will slack off when the last gun has been fired. It is for this reason we are keeping a vigilant eye on the basis of our business—the normal customer. Too, we realize we must be fortified in all instances to resume normal operations and equipped to meet the accelerated competition of the post-war era.

In closing, the industry has evaluated itself. We know the scope of the tasks ahead, and the capabilities of our industry. There is a grim determination to see the job through. All in our power will be done to bring down a victorious curtain on World War II in the shortest time possible. Until this is accomplished, our total energy is devoted towards placing in the hands of those fighting the battle, the guns, tanks, ships and airplanes which will deliver our message to the enemy.

Conservation Board Set Up in South Dakota

A MEASURE creating an oil and gas conservation board to control exploratory work and possible production in South Dakota was approved by the South Dakota legislature at its 1943 session and signed by Governor M. Q. Sharpe.

The board will be composed of the governor, attorney general, secretary of state, state treasurer, commissioner of school and public lands, and the state auditor.

The state geologist and the state engineer will serve in advisory capacities.

The board will have authority to regulate all oil and gas exploratory work, but the measure specifically limits its authority with the provision that it shall have "no jurisdiction to make rules and regulations or orders which restrict or limit production of petroleum, oil or gas in the absence of waste."

The measure creating the board provides that no wells shall be drilled closer than 200 ft. from any adjacent property line or 500 ft. from another well on the same property. This provision does not apply, however, to core test wells or stratigraphic wells.

The law also provides that the board must be notified of plans for drilling of wells and sets a fee of $25 for each well. If a well-drilling application is denied, a hearing must be granted to the applicant within 20 days after the application was made and the decision must be announced within 25 days. All decisions of the board can be appealed to the circuit courts in the state.

The law also provides that well-drilling applications must carry the exact location of the proposed well, the names and addresses of the owner, operator, contractor and driller, and that the well log, drilling records, drill cutting or cores must be filed with the board within six months after the well is completed.

The board must also be given notice of the intention to drill stratigraphic tests and a plugging report must be filed 60 days after the test is completed. No fee is required, however.

The South Dakota legislature also passed a measure appropriating $25,000 for the payment of a bonus for the first producing South Dakota well, but the bill was vetoed by Governor Sharpe, who said its constitutionality was questionable.

Also approved by the legislature and signed by the governor were measures requiring more detailed oil and gas leases for filing with county registers of deeds, including the post office address of the owner and the legal description of the land, and requiring surrender of oil, gas or mineral leases within 15 days after they expire.

South Dakota has been the scene of considerable oil and gas exploratory activities during the last three years. About 7,000,000 acres are under lease in North and South Dakota.

Trends In
PUBLIC UTILITY REGULATION

By C. O. RUGGLES

Professor of Public Utility Management and Regulation,
Harvard Graduate School of Business Administration

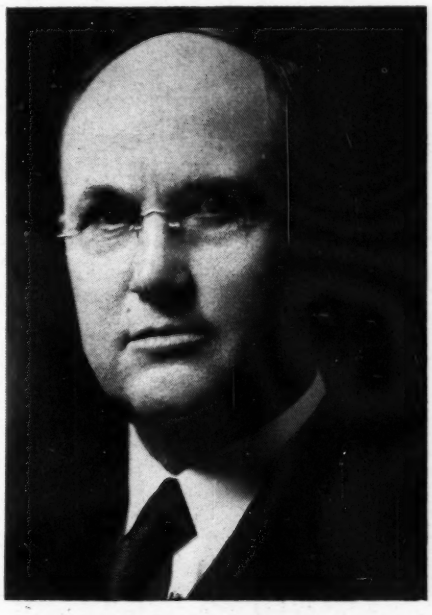
THIS brief discussion is limited to some trends in regulation: first, as affecting rate making; second, in determining a rate base; third, concerning public utility management; and fourth, as to the character of regulation itself.

The impact of two world wars on public utility rate making has been significant. Rate regulation of utilities other than carriers was comparatively new when World War I broke out. In the early history of our public utilities neither the men managing these industries nor those responsible for their regulation understood how to make utility rates. The rates of the early gas companies, for example, did not give adequate weight to the fact that there is a very close relationship between rate making and the fullest possible development of the various segments of the market for gas. Indeed the earliest gas rates were made on the assumption that the market for gas was homogenous, hence the wide use of uniform rates regardless of the amount used or the economic factors involved in pricing gas for different types of customers.

Early public conception of rate making was very much confused. There was a widespread faith that competition was the best possible method of regulating rates even among full-fledged public utilities. But the public was inconsistent, since, along with this early theory, rates were being rigidly fixed for very long periods of time in utility franchises. At the beginning of World War I, both of these unsound theories regarding rate making had been rather generally discredited although by no means discarded. By that time we were beginning to grant power over rate making to public utility commissions, because we had become convinced that highly dynamic economic factors should be given greater consideration in rate making.

But at the beginning of the Warld War I the two commissions that were leaders in a more vigorous regulation of utilities, New York and Wisconsin, were only about seven years old. Moreover, it must not be forgotten that one of the outstanding reasons for creating these public utility commissions was to bring about reductions in public utility rates. Consequently, when costs of utility service advanced sharply during World War I, it was very difficult indeed for these new administrative bodies to make advances in rates.

Automatic adjustments of rates through coal or fuel clauses did not come into use until near the close of the First World War. But it is a fair statement that our experience during that war did much to disturb the complacent theory that public utility rates could be expected to remain fixed and rigid while the prices of everything entering into utility service sharply advanced. The change in public opinion regarding rate making, growing out of the difficulties experienced by the public utilities in World War I, resulted in various types of regulatory measures, beginning approximately at the close of the war. Among other things, certain of these statutes sought, first, to secure greater flexibility in utility rates and, second, to shorten the time required in making changes in rates.



C. O. RUGGLES

We are now seeing, in the government's efforts to prevent inflation, an attempt to prevent, among other things, the operation even of automatic fuel clauses which might result in a general advance in certain public utility rates. And yet the increases in the price of fuel would seem to be the logical starting point for government action. But in spite of the fact that the public utility industries may be called upon in this war to serve as shock absorbers for the government's failure to hold down prices of what enters into public utility service, when the lessons of the two World Wars are fully understood it seems probable that there will be a growing appreciation of the fact that public utilities cannot be expected to perform economic miracles; that they cannot operate under fixed or reduced rates when everything they must use to provide service has advanced in price.

A part of the effort to cut down the delays in bringing about changes in public utility rates involves the second point in this discussion, the determination of a rate base. Neither the public nor the public utilities have been consistent with regard to the choice of a rate base. In the notable case of Smyth vs. Ames, decided by the Supreme Court in 1898, William Jennings Bryan, as counsel for the interests of the public, contended for reproduction cost, while the railroads favored investment as indicated by their outstanding securities. Prices at the time this case arose in the State of Nebraska were low compared with the prices under which many of the railroads of the Middle West had been built. For this reason Mr. Bryan contended for reproduction cost as a rate base because it would give a lower rate base. Likewise the railroads favored emphasis on investment calculated as has been indicated, because such procedure would result in a higher rate base. Curiously enough, the ink was scarcely

Presented before the 17th Annual Business Conference of the New England Gas Association, held in Boston on March 18, 1943.

dry on Mr. Bryan's brief before prices started a long climb upward; hence, not many years later railroad and other public utility attorneys were making use of Bryan's arguments and shifting their support to reproduction cost, while the public became the champion of some such theory as original, or historical cost or prudent investment. If we should go through a period of years in which there will be marked expansion of public utility plant at inflated prices, we will doubtless see the public and the public utilities again shifting their position regarding their choice of a rate base.

While in this brief discussion it is not possible to consider the merits of the different theories of determining a rate base, it is germane to the issues involved to point out that the vital importance of the time element involved in making changes in public utility rates is one of the strongest arguments against the use of reproduction cost as a rate base. Unless changes in rates can be made within a reasonable period of time, neither the public utilities nor the public is likely to secure the relief to which each may be entitled. To eliminate much of this delay, statutes, growing partly out of the experience in the first World War, were passed which provided for temporary or negotiated rates, thus eliminating much of the time required to find reproduction cost as a rate base.

Sliding Scale Plan

For the same reason there has been increased interest in the use of automatic or escalator clauses and the so-called sliding scale plan of securing automatic changes in rates without the expense and delay involved in long-drawn-out rate cases. While sliding scale methods of rate changes have their limitations and the sliding scale itself must be adjusted as economic conditions change, any device which will shorten the time involved in making changes in rates deserves serious consideration. An effective sliding scale, involving as it does not only rate changes but also the rate base itself, is dependent upon intelligent adjustments being made by competent public utilities commissions.

Some of the more recent decisions of the Supreme Court indicate that the public utility commissions are to be given more freedom and responsibility in rate making and in determining a rate base. In the Natural Gas Pipe Line Co. case, decided in March 1942, the Supreme Court said:

> The Constitution does not bind rate-making bodies to the service of any single formula or combination of formulas. Agencies to whom this legislative power has been delegated are free, within the ambit of their statutory authority, to make the pragmatic adjustments which may be called for by particular circumstances. Once a fair hearing has been given, proper findings made and other statutory requirements satisfied, the courts cannot intervene in the absence of a clear showing that the limits of due process have been overstepped. If the Commission's order, as applied to the facts before it and viewed in its entirety, produces no arbitrary result, our inquiry is at an end.

It is a compliment to our courts that they are giving increased recognition to the fact that the public utility commissions are in a strategic position to become familiar with the economic factors involved in public utility regulation, and hence should be given somewhat more latitude in rate making and in determining a rate base. It is to be hoped that the commissions will justify the increased responsibility that has been placed upon them by this recent decision. These commissions will be unable to do this unless they receive public recognition.

After all, the problems involved in rate making and in determining a rate base are economic problems, and the public should take the Supreme Court's decision seriously and see to it that public utility commissions are adequately financed; that they are made as free as possible from political interference; that the salaries of commissioners and experts on their staffs be adequate and the tenure of office be such as to attract capable men.

The Supreme Court has given the public a real incentive to improve the character of these commissions, and thus to focus increasing attention upon economic rather than mere legalistic issues in rate making and in the determination of a rate base.

Regulation concerned with public utility management was until the middle 1930's very slow in developing in the United States. Within the past decade much emphasis has been placed on this aspect of public utility regulation. The attempts on the part of the management of some of our large public utility systems and the various interests affiliated with them to obtain large gains through public utility financing greatly stimulated the demand for this phase of regulation.

The exact dividing line between what should be left to public utility management and what should be determined by regulatory bodies is very difficult to draw. It is, as someone has said, like attempting to draw the dividing line between day and night. All regulation interferes more or less with management, but in more recent years many decisions formerly left entirely to management have been made by regulatory agencies.

Because of the possibilities of fortunate or unfortunate results from such regulation, we are again confronted with the need for thoroughly competent and well-equipped commissions if we are to have such a realistic approach to the regulation of public utility management as will not discourage efficiency in management. The public interest will not be served by a type of regulation which can be properly characterized as undue interference with public utility management. But there is a vast difference between regulation which constitutes unwarranted interference with management, and regulation which holds management responsible for reasonable results. Moreover, such regulation should apply to all public utilities, whether publicly or privately owned and operated. The discussion of the third point leads normally into the fourth, trends in the character of regulation itself.

Centralization Problem

While it is not possible within the limits of this discussion to consider the degree to which provisions of the Holding Company Act are sound or unsound, it may be pointed out that the government was justified in objecting to certain managerial control by top holding companies over some of the affairs of far flung operating companies. Under this high degree of centralized management of some of the holding company organizations, decisions were made on certain matters of public utility management that could have been more wisely determined by the executives of the operating companies. Now, however, the government is making the same mistake in the field of regulation that the utilities made in the field of management. While we must have federal control over matters which are beyond the power of the states, we need not develop a high degree of centralization in federal regulation. Decentralization or federal regulation through federal regional commissions deserves to be given very serious consideration in a country the size of the United States.

Finally, different federal agencies now have control over certain aspects of the utility business that should be controlled by a single federal commission. Complete familiarity with one phase of a public utility's business is often invaluable in the regulation of another aspect of its business. This fundamental principle ought to be given recognition through some careful "integration" of federal regulation.

POST-WAR PLANNING

From the Manufacturers' Standpoint

By COLONEL WILLARD F. ROCKWELL

President, Association of Gas Appliance and Equipment Manufacturers
President, Pittsburgh Equitable Meter Co., Pittsburgh, Pa.

FIGHTING in this war will probably end very suddenly, but it may be followed by an armistice lasting several years. It is fairly safe to assume that the end of fighting will bring a return to normal procedures and release of government controls of our national economy. There is never a time when a successful manufacturer can avoid the necessity for planning. In good times we plan to reach maximum production and yet avoid overexpansion that will destroy us when the business cycle brings about the inevitable depression. During the depression, we must plan on reducing unnecessary expenditures and developing new products and low cost methods to revive demand for our products.

War means depression for some, and maximum production for others. Some products immediately become critical needs for the armed forces, while others must be eliminated so that the labor and material which they require can be diverted to more essential uses. Some manufacturers who are producing nonessentials can quickly convert to the production of war material. We know from history that some wars have been followed by long depressions, while other wars have been followed by great expansion of industry and commerce.

Last Post-War Period Reviewed

The World War fighting ended with an armistice in November, 1918 which was followed by a period of hesitation of approximately six months, following which there was an inflationary expansion of approximately nine months. The minor panic which followed was induced by fears which led to wage-cutting and price-cutting. After a few months of wage-cutting, when the public became confident that stability had been attained, the pent-up demand for materials which had been eliminated during the war made itself felt. A shortage of housing was emphasized by the return of the demobilized armed forces, and the building boom was followed by expansion and booming markets up to 1929.

It is fairly safe to say that the strength of the labor unions will eliminate wage-cutting and, therefore, eliminate a repetition of the 1920 deflationary panic. The greatly reduced production and manufacturing of nonessentials, and the tremendous destruction in the war-torn countries, will create an enormous demand for many products and services.

There has been so much said about the record shipbuilding performance in this country that very few people realize it will take years to make up for the Allied losses; and when peace comes, the world must also make up for the Axis losses in shipping before we shall have returned to normal, world-wide ship capacity.

Roughly speaking, all of our domestic production can be placed in one of four classifications. First, there are the producers and industries which have been expanded far beyond any former peacetime requirements, which, therefore, must either create new markets for their products or enter into cost-cutting and price-cutting that will eventually eliminate the weaker and less efficient producers and manufacturers. Carbon steel is probably in this classification, but it is quite possible that, with greater efficiency, relative prices may be low enough to use steel in prefabricated houses, which will create a great new market.

In the second class are such products as aluminum and magnesium. Their former peacetime use was only limited by the cost of production. Under government stimulation, both have been expanded and many new methods have been introduced which will further reduce their cost. The world has many applications for this increased production. Many of the articles now made of cast iron will be made of aluminum or magnesium if the cost is as low as predicted by experts. Plastics are also in this classification, as there are many articles which can be made cheaper and better now that plastics are available in large volume.

In the third class there are utility and household appliances and equipment, and thousands of items classed as semi-luxuries, the production of which has been curtailed or eliminated during the war, and for which an enormous demand has accumulated. Manufacturers who formerly produced these articles may be engaged in war work and may never return to their former production. Others are designing better products and preparing for greater production at lower costs, so that they may use their expanded productive capacity to fulfill these demands.

The Advent of Wartime Products

In the fourth class are products which were retarded in development because they required large sums of money; and as the money was not available before the war, they were not brought into production until required for war needs. With money provided by the government and production stimulated by the requirements, some of these products may revolutionize modern life as we know it. Synthetic rubber was not generally developed before the war because it could not be produced economically in small volume and could not compete with natural rubber. Neoprene and thiokol were used at higher costs where they were superior to rubber in resisting oil damage and heat. Some experts say that synthetic rubber will eventually be cheaper than natural rubber and, in its variations, will be superior to natural rubber for almost every use, while others say that the cost will be prohibitive and at least 50% of natural rubber must be used in most applications to obtain a satisfactory product. Who can say positively whether synthetic rubber will destroy the rubber plantation, or whether natural rubber will resume its former place in peacetime world economy? The rubber industry used large quantities of carbon black derived from natural gas in remote areas which did not provide a better and more efficient use for natural gas. If synthetic replaces natural rubber, part

of the carbon black market may disappear.

During the war, enemy submarine action has required construction of large oil lines from Texas to to East Coast. These oil lines probably cannot compete with tanker transportation from Texas to the East Coast, so eventually tankers will resume their task and the oil lines may be available for natural gas. The natural gas formerly used to produce carbon black may be diverted to these pipelines. Communities which have no gas may be served with natural gas, and more distant communities with manufactured gas plants may use mixed gas.

Without attempting to prophesy the final result, it is absolutely certain that there will be a very radical change in the relative cost of wood, coal, gas, and electric power. Some experts say that lumber is too valuable for building uses; others say that petroleum is too valuable to use as a fuel. It is claimed that petroleum by-products which are now being developed, combined with increased demand for small power units, will remove petroleum from the purely heating market. It is estimated that there are 14 billion barrels of oil available, but that it cannot be removed by present methods in less than 50 years. The cost of exploration and of development may increase rapidly. Oil may be prohibitively high for many present heat uses, simply because it has many more efficient uses or essential requirements to fill.

Feature of Gas Industry

My own study of the problem has convinced me that the gas industry, both manufactured and natural, is going into the greatest expansion it has ever known. The dependability of gas service in peace and in war has exceeded that of any other fuel used in the past. It may not always be the cheapest fuel on a Btu. basis, even when it is the best fuel from the standpoint of economy and efficiency. The technique of storing natural gas underground in old exhausted fields in Ohio, Pennsylvania and other points, has made it possible to use pipelines to their maximum capacity throughout the year; and, incidentally, increased the maximum output available for sudden seasonal demands. American love luxury, particularly in their homes; and the use of gas for heating in cold weather and for cooling in hot weather, is still in its infancy in most areas. The industrial use of gas in heat-treating, with special equipment to avoid corrosion of the finished product, has opened up a tremendous potential industrial market. The manufactured gas industry may develop new by-products and new methods of production as a result of wartime restrictions and substitutions.

The liquefied petroleum gas industry was growing very rapidly and carrying gas into many remote areas until it was placed under severe restrictions by our war needs. Liquefied gas was needed for other purposes, the steel for tanks was denied, and all other equipment was required for other uses. The increased capacities of our refineries may result in the production of butane, propane, and other hydrocarbon gases in unprecedented quantities. It may be distributed as bottled gas, or through community distribution systems, or for auxiliary and emergency capacity in manufactured gas plants hundreds of miles from the refineries. Increased use of bottled gas contributes volume to manufacturers of gas appliances and equipment, which is sure to be reflected in lower prices, thus helping the gas industry everywhere. Very few industries have been so completely converted to war use as the gas and petroleum industry; therefore, we are faced with the greatest problem when peace returns.

FOLLOWING the first World War, Col. Willard F. Rockwell organized the Wisconsin Parts Co. of Oshkosh, Wis., a predecessor to the Wisconsin Axle Co. In 1926 he became president of the Pittsburgh Equitable Meter Co., and in 1933, upon the merger of his Wisconsin Axle Co. with the Timken Detroit Axle

Co., he accepted the presidency of the combined firm. He now serves as chairman of the board of directors for Timken.

Since April 7, 1942, on the recommendation of General Knudsen and at the request of Admiral Emory S. Land, Colonel Rockwell has been assigned to duty as director of production for the U. S. Maritime Commission. In this capacity he is in charge of the production of all vessels ordered by the commission and must see that they are built on time and that schedules are maintained or exceeded.

Colonel Rockwell presented this paper before the annual convention of the New England Gas Association at Boston on March 18.

Cumulative Demands for Equipment

Nevertheless, we have been given the opportunity to expand, to experiment and to develop new methods which could not have been tried for many years without war stimulation. The manufacturers of equipment and appliances have been hit harder by war restrictions than most industries. Their consolation must be that they will have tremendous cumulative demands in the future, with few exceptions. For example, large meters have been in great demand for cantonments, public housing projects, and factories, many of which will not be required after the war. The manufacture of meters for either gas or water will be suspended until such meters are salvaged and placed in new plants. On the other hand, small meter production has been greatly restricted, and repair and maintenance have been postponed so that they are incurring accelerated deterioration. Installations have been made without meters on the flat-rate basis, and single large meters have been used for group consumers. After the war, utilities will want many small meters to replace large community meters. Replacement of the small worn-out meters, combined with a residential building boom, will assure a market for domestic meters.

Some authorities, who believe the war will end very soon, hesitate to express such an opinion for fear that the Nation will relax in its efforts. There are signs that the Axis is desperately short of many war necessities, and we know that the Axis countries are surrounded by enslaved nations which will rise in terrible fury at the first sign of Axis weakness. Our greatest task may be to bring peace between the Axis and its victims.

We can be proud of the part that the gas industry has taken in promoting the war effort by its efforts to expand its production when necessary, and by its willingness to sacrifice production which interfered with the war effort. None of us can escape this conflict without scars; but we can, and should, plan so that our industry may take its rightful place in that brighter future which it is our duty to expect, regardless of the misfortunes which loom so ominously these days.

High Pressure Gas Transmission

By C. E. TERRELL

Southern Natural Gas Co., Birmingham, Ala.

IN January, 1941, a subsidiary of the Southern Natural Gas Co. brought in its first gas producer in the Logansport field, located on the Texas-Louisiana border about 50 miles southwest of Shreveport. The well was completed with a shut-in well head pressure of 2427 psi. in what is locally known as the Jeter formation, which is encountered at Logansport at about 5000 ft.

By early April, several other wells had been completed and the company had its pipeline project under way for bringing this gas into its main line system. The survey for the new line described practically a straight line from Logansport to Perryville, La., a distance of approximately 125 miles.

The large volumes and high pressures available on these wells naturally led to consideration for a high pressure line, and decision was made to lay 14-in. O. D. pipe with $\frac{5}{16}$-in. wall thickness designed for operating pressures of 1200 lb. on a safety factor against yield point of 1.78 and against ultimate strength of 2.23. Specifications on this pipe were a modified 5-L. These specifications, with average data on tests conducted at the mills, are shown in Table 1.

These mill tests showed that Lot No. 1 had an average safety factor of 2.07 against yield point and 3.04 against ultimate strength. This pipe was allocated to the west half of the line. Tests on Lot No. 2 showed an average safety factor of 2.03 on yield point and 2.63 on ultimate strength. This pipe was allocated to the east half of the line where its greater ductility contributed to easier bending in the somewhat rougher terrain encountered on this end of the line.

The pipeline was electric welded throughout, using No. 7 rod on the roll welds in four to six joint lineups and No. 5 rod on the bell-hole welds, running four passes to the weld. No expansion joints or sleeves were placed in the line, it being welded solid and given slack by the usual method of holding up slack-loops behind the lowering in. Normal cover was 30 in. Valve settings were installed after the line was laid.

Pipe was bent cold in the field with tractor power and special bending blocks made to encompass one-half the periphery of the pipe, effectively preventing any buckling or wrinkling. This cold bending was done by having one tractor rest its weight on top of the bending block which was set over the pipe while another tractor with side boom raised the free end of the pipe. There were no difficulties encountered in bending by this method and practically no throwouts caused from buckled bends.

Main valves were installed on the line at approximately 5-mile intervals, this distance varying somewhat to meet the convenience of accessible roads. Model No. 2249 10-in. Nordstroms, worm gear operated, with a 1200 psi. cold working pressure rating and Series 600 flanges were specified for the main valves. Special fabricated long venturi type reducers were flanged to the valves and welded to the pipe. Copper-clad asbestos gaskets were used in all flanges. These gaskets have in a few cases given some difficulty in accomplishing a perfectly tight joint and a few have been removed and replaced with regular $\frac{1}{16}$-in. asbestos composition gaskets which have so far proved satisfactory. All flange bolting was with special alloy studs.

Four-inch blow-off risers were located 20 ft. on each side of the main valves. The risers were welded and saddled to the 14-in. pipe and were anchored with 1½-in. extra heavy welded pipe bracing and, as will be noted from the distance from the main valve, are well outside the box enclosure for the main valve setting. These risers are valved with worm gear operated lubricated plug valves. Flanged to these valves are 4x4-in. spools equipped with Murphy blow-off flanges. It is an interesting characteristic of these blow-offs that no greater noise is evident in a blow-down from 1400 psi. than on gate valved blow-offs on the main line system at 450 psi. No by-passes were installed around the main valves, as it appeared that with the worm gear on the lubricated plug they could be operated satisfactorily against high differential pressures. Actual field use has since shown that these valves are easily operated even with a differential pressure of 1400 psi.

There are at present eight drips located along the line. These are simple cross shaped barrel type drips fabricated of 14-in. pipe welded into the line with welding saddle reinforcements. They are drained with a 1-in. pipe syphon extending down through the top of the cross and bent in a shape to fit the side wall on the inside of the barrel to locate it out of direct flow of the gas.

The line crosses three main rivers—

TABLE 1. PIPE SPECIFICATIONS

	Specifications	*Average Test*	*Conforming to Grade*
Lot No. 1 (National Tube)			
Yield point per sq. in. (min.)	48,000	55,600	$\left(C+\frac{55600}{45000}\right)$
Ultimate strength per sq. in. (min.)	60,000	81,600	$\left(C+\frac{81600}{75000}\right)$
Per cent elongation—2-in. (min.)	25.0%	34.50%	(A)
Carbon (max.)	0.30	0.28	
Manganese (max.)	1.25	1.075	
Phosphorus (max.)	0.045	0.015	
Sulphur (max.)	0.06	0.028	
Lot No. 2 (Republic)			
Yield point per sq. in. (min.)	48,000	54,500	$\left(C+\frac{54500}{45000}\right)$
Ultimate strength per sq. in. (min.)	60,000	70,600	$\left(B+\frac{70600}{60000}\right)$
Per cent elongation—2-in. (min.)	25.0%	39.6%	(A)
Carbon (max.)	0.25	0.223	
Manganese (max.)	1.00	0.78	
Phosphorus (max.)	0.045	0.012	
Sulphur (max.)	0.06	0.038	

Each joint was hammered five seconds under 1500 psi. hydrostatic tes.t

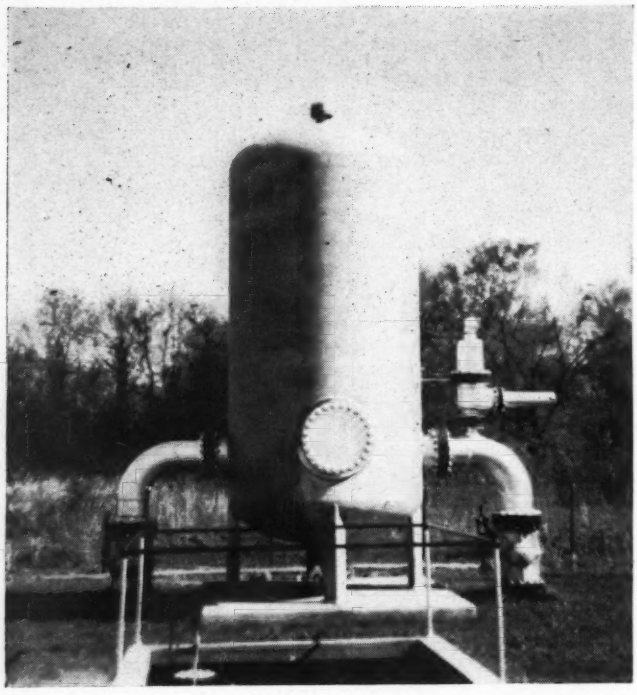


FIG. 1. Open view of kitchen range clothes dryer, showing details. The wire guard rack, normally directly over the bottom baffle, is shown in a raised position where it acts as a shelf on which knit goods can be laid while drying.

the Sabine, the Red and the Ouachita. Two 14-in. river lines of the same character of pipe as the main line and with 1800-lb. river clamps were laid directly across the Sabine, the dual lines being designed to serve more as a safety factor against possible hydrate formation, since this point is upstream to the dehydration plant, than against loss of a line from stream action. Across the Red and Ouachita rivers, the crossings were made with two 10¾-in. O. D. ¾-in. wall, 80.1 lb., Grade "A" lines. These lines were installed with upstream catenaries and without weight clamps. This ¾-in. wall pipe had a comparative weight of 87% of the equivalent length of ½-in. wall 10¾-in. O. D., 54.735 lb., pipe with 1500-lb. clamps every 40 ft. Another short multiple of two—10¾-in. O.D. ½-in. wall, Grade "A" lines were laid across Loggy Bayou. These latter lines were weighted every 40 ft. with 1500-lb. river clamps.

The line was blown for cleaning at each gate setting. Approximately 80 miles was blown with Logansport field gas with 600 lb. line pack against each control valve as the blowing progressed. With this reserve pressure on these sections of line which average about five miles in length, the gas generally showed perfectly clean in less than 10 minutes; however, to make certain of completely cleaning the pipe, the blows were continued for a total of 20 to 25 minutes, varying according to length of section. Approximately 45 miles of the east end of the line was blown from the Perryville end with reserve pressures of 450 lb.

When blowing was completed, the pressure on the west 50 miles of the line was built up to 1400 psi. and the remaining 81 miles on the east end to 1300 psi. These pressures remained on the line for 30 hours during which time no failure developed. Other than minor gasket leaks found on soaping the block valve flanges, only one leak was discovered on the entire line. This was a small pin hole in the bottom of a bell-hole weld. When the line was placed in operation, it delivered gas into the main line system at the rate of 40,000,000 a day.

Gas is measured into the field gathering system for the line over standardized 6-in. orifice runs, generally located at the wells. These runs are equipped with Series 600 welded flanges and are reduced at each end for 4-in. valving. The 4-in. valves are lubricated plug type and the orifice flanges are Series 600 electric welded slip-ons. A bottom tap on the upstream orifice flange has open valve drainage into a small fluid accumulator buried beneath the run to keep the meter tube free of condensate. These stations are equipped with 100-in. 4000-lb. W. P. orifice meters with 2000-lb. static springs for which special flange tap meter manifolds were designed with 2x14-in. condensate traps.

A similarly equipped 12-in. meter run was installed on the main line at the dehydration plant.

Gas is measured out of the 14-in. line into the main line system at Perryville over a station equipped with five 8-in. orifice runs with 100 to 1000 lb. W. P. orifice meters with 1000-lb. static springs. The station is valved throughout with worm geared lubricated plug valves. On the upstream side of the station to and including the header downstream to the rate-volume control regulator, the flanging is Series 600. Downstream to this point, Series 300 was used. All header nozzles and side outlets were saddle welded to the pipe. Measurement for accounting purposes is at existing terminal pressures on the 14-in. line which, under full load conditions, would be around 475 psi. To reduce the terminal pressure when higher than that existing on the main line system, gas passes from the 8-in. measuring system to two 12-in. regulators, one of which is equipped with special control and the other a standard weight loaded unit for stand-by service. Normal operation of the controlled regulator reduces the 14-in. line terminal pressure to slightly above the pressure existing on the main line system, usually about 450 lb. From the regulator the gas passes directly through a 12-in. orifice run equipped with rate-volume controller, then through the pulsation tank into the main line.

C. E. Terrell

Mr. Terrell's experience in the natural gas industry began in 1916 with the Standard Oil Co. of Indiana in the construction and operation of casinghead gasoline plants in the In 1918 he entered the Machine Gun Officers Training School at Augusta, Ga. In 1919 Mr. Terrell joined Chestnut & Smith in construction of natural gasoline plants in the Ranger, Texas, Field. In 1920 he served the Prairie Pipeline Co., and in 1921 became affiliated with the engineering department of Texas Pacific Coal & Oil Co. In 1922 he formed an engineering partnership, specializing in natural gasoline plan surveys, gas testing service, and plant construction and operating problems, and from 1923 to 1929 was engaged in supervising personal interests in natural gasoline production and leasing and drilling operations in north-central Texas fields.

His experience in large natural gas transmission lines dates from 1929 when he was a division inspector for Brokaw, Garner, Dixon & McKee, engineers on the construction of El Paso Natural's 16-in. line from Jal, N. M., to El Paso. In the latter part of 1929 Mr. Terrell went with Ford, Bacon & Davis as pipeline inspector on Southern Natural's main line construction, remaining with Southern Natural after construction to organize its gas measurement department which is still under his supervision. He is in charge of the company's research program and is a member of the general committee of the Southwestern Gas Measurement Short Course.

The delivery point of the 14-in. line into the main line system is located about 1000 ft. downstream from the discharge of the Perryville compressor station. It is well known that compressor discharge pulsations have a disturbing effect on the accuracy of the orifice meter and therefore an important consideration in the design of the measuring station at the terminus of the 14-in. line was to insure, without sacrifice of pressure against these pulsations reaching the meters. Following data from the experiences published by T. K. M. Smith and R. E. Morter of the Industrial Fuel Supply Co. of California, a tank was designed for this purpose. (See *GAS*, Sept., 1938, p. 55.)

A principal feature of this tank, which is 6 ft. 6 in. I. D. x 10 ft. 9 in. shell, is an internal U-bend, made of two 12-in. welding ells and a 12-in. by 6 ft. nipple, welded inside the tank to the outlet opening with the open end of the U-bend spaced 6 in. from and facing the inside wall of the shell. The tank is set in a vertical position. Gas enters the tank directly through a 12-in. outside nozzle and leaves the vessel through the U-bend. The efficiency of such a tank depends on this flow pattern combined with the volume of the tank which is designed on a diameter to length ratio. The formula used was where Q=flow in millions of standard cubic feet per 24 hours; and P=absolute pressure of the gas.

The rule is to make the cylindrical length of the tank 1.75 times its diameter, final design being modified to conform with available plate and heads. Delivery of this vessel was somewhat delayed and the measuring station had been in service several weeks before the tank was installed. During this interval the compressor pulsations, while isolated from the master meters by pressure reduction, were of sufficient severity to impair the accuracy of all gage equipment to which it was exposed. Upon placing the tank in service this condition was quieted completely. Fig. 1 is a photograph of the pulsation tank.

As the transmission of gas at extremely high pressures is subject to hydrate formations, dehydration of gas to be handled by the 14-in. line was an important consideration, presenting a pioneering problem due to the lack of actual transmission line experience with the pressure involved. Since the theoretical hydrate decomposition temperature at 1200 lb. is 67.1°, there remained to be considered but two known practical methods with sufficient capacity for dew point depression. One of these was the diethylene glycol process and the other using a solid adsorbent such as activated alumina.

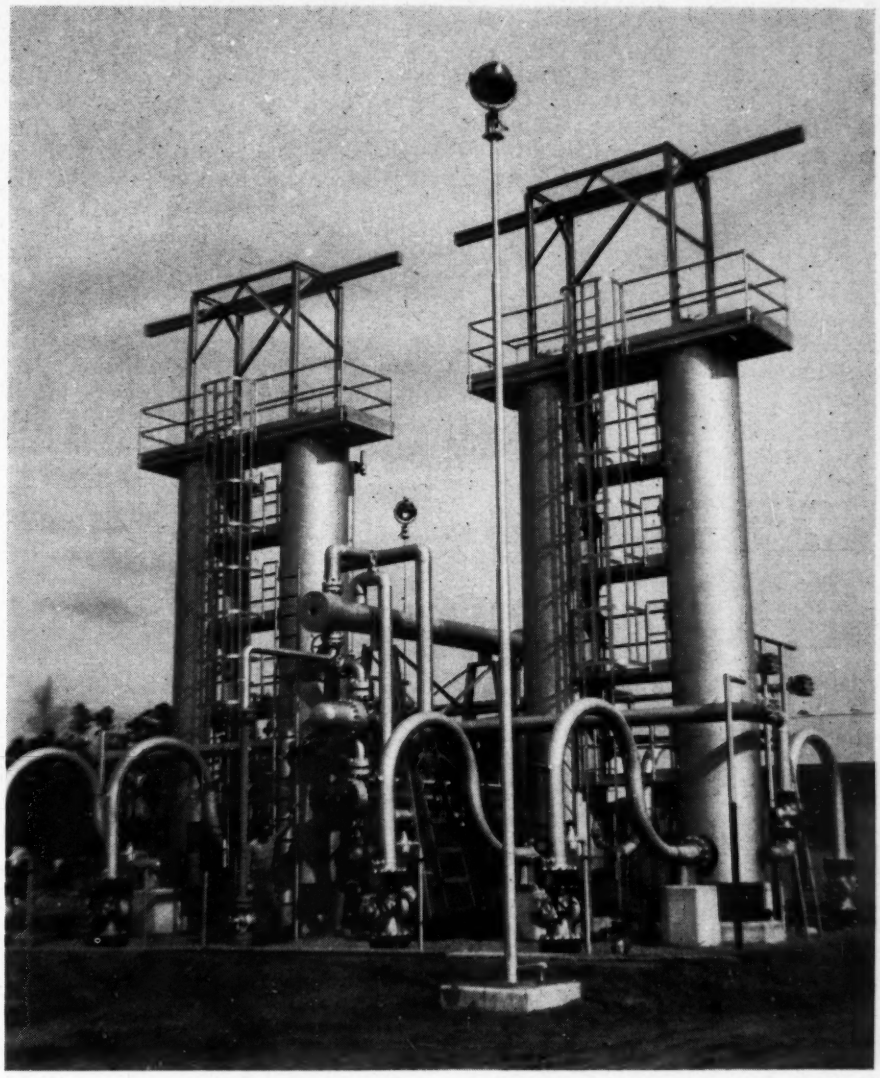


FIG. 2. Dehydration plant using solid adsorbent.

A plant using the solid adsorbent was chosen for the following reasons:

1. Apparent continued availability of adsorbent materials.
2. Greater capacity for dew point depression.
3. No tendency to form solidifications under high pressure.
4. Simplified process of reactivation.
5. Low operating cost.
6. Apparent freedom from entrainment losses.

While a diethylene glycol plant might have accomplished adequate protection for the 14-in. line, one of the principal considerations in the selection of a solid adsorbent type was the capacity of a desiccant such as activated alumina to reduce the dew point of the gas far below the lowest temperature that might be expected to develop on the line. Gas dried to such extent and introduced into the main line system and commingled with gas from which the water vapor had not been removed would thus reduce water entrainment in the main line system, thereby reacting favorably on the entire system capacity.

In making the decision for the use of solid adsorbent, such possible disadvantages were considered as probable dusting off of the adsorbent granules if agitation were set up in the beds by gas flow and possibility of fouling and thus losing efficiency through contact with condensable hydrocarbons from the gas stream. No tendency toward either of these disadvantages has thus far been indicated.

The principal feature of the Logansport dehydration plant are four 36-in. I. D. x 25-ft. adsorber towers, set in batteries of two towers in parallel; one 104-hp. oil field type boiler; one reactivation gas heater; and the condensate receiver. The adsorbent towers have five grids or trays spaced 5 ft. apart inside the shell to prevent compacting of the material. Inlet and outlet connections are 8 in. and are located near the bottom of the shell. Inside the tower

is an 8-in. elbowed riser welded to the inlet and extending up through the trays to a point near the top of the tower so that the inlet gas will impinge against the top, then pass downward through the drying agent, thus tending to hold the material firmly on the trays and prevent agitation of the granules as might be the effect if the gas flowed upward through the beds. Fig. 2 shows the principal details of the plant.

At present the plant is being operated in eight-hour cycles, that is, the gas stream is passed through one set of adsorbers directly to the main line for eight hours, then the stream is switched to the other set which in the meanwhile has been reactivated and cooled.

Reactivation Process

In the reactivation process gas at the rate of approximately 200 Mcf. per hour is piped from the inlet header to the gas heater which is steam-heated to 380° F. This heated gas passes to the lower part of the wet adsorbers for about five hours, at the end of which period the temperature at the top of the towers will have reached 325° F. when a controlled valve automatically shuts off the steam to the heater.

The hot reactivating gas passes from near the top of the wet adsorbers to the heat exchangers where it is cooled by counter-flowing dehydrated gas, of about 60° F. temperature, which is bypassed from the main stream leaving the active towers.

Water is condensed from the reactivating gas in the heat exchangers from which it flows to the condensate receiver. It is then piped to a tank for gaging. The reactivating gas passes from the heat exchanger through the condensate receiver to the bottom beds of the active adsorbers where it mixes with the main stream and is dried before entering the pipeline.

Each adsorber tower is charged with approximately 6500 lb. of adsorbent material. The operators are now experimenting with two kinds of this desiccant. One battery is charged with activated alumina and the other with a material commercially known as "Florite." Both are products of bauxite and are quite similar in mesh characteristics and in general appearance differ principally in color, the alumina being white while the "Florite" is pinkish or rose color.

The dehydration plant was designed and built by J. F. Pritchard & Co. of Kansas City. Ford, Bacon & Davis, Inc., were the consulting engineers and supervised its construction.

The plant went into operation on Jan. 1, 1942. The pipeline was placed in service 60 days earlier, but the weather had been mild during the interval and at 950 psi. pressures no evidence of hydrate formation had appeared. However, in January when the atmospheric temperatures dropped to 20° above zero, hydrate formation began to appear in the six miles of 14-in. line upstream to the dehydration plant and in the gathering lines of smaller diameter. No complete stoppage occurred on this upstream section of 14-in. line but partial obstructions formed which caused 75 to 100 lb. differentials indicating that serious trouble might have developed on the system downstream to the plant had it not been in operation. These partial stoppages were relieved by raising the temperature of the gas at the wells. On several occasions 4 and 6 in. gathering lines were blocked completely by hydrate formation and required depressuring of these lines to transform these hydrates to the liquid phase.

Complete stoppages have also occurred on the inlet to the active dehydration towers when flowing gas temperatures were around 43° F. at 950 psi. It is thought that these obstructions developed in the inlet piping and not in the main chambers of the adsorbers. The procedure on these occasions was to switch the gas stream to the inactive adsorbers and depressure the blocked system.

Performance of the plant was checked with a Bureau of Mines apparatus for determining the dew point of gases under pressure.

The inlet dew point, as shown by this device on the gas at 950 psi. is around 48° F. Theoretically, hydrate decomposition at this pressure may take place at a temperature of about 62.7° F. Present dew point readings on the outlet of the plant average minus 20° F., and there has so far been no indication of declining efficiency in the adsorbent material. However, the plant at this writing has been in operation only three and a half months and no exhaustive tests have been made on it. A practical demonstration of the plant's efficiency occurred in March. This was at a meter setting on the 14-in. line to serve a drilling well. In the first two days of operation of this setting the initial pressure reduction was from 670 psi. to 250 psi., with the result that about 3 in. of ice formed on the outside of the primary regulator, the meter and for 200 ft. beyond the secondary regulator.

Except for outside ice interfering with the meter index, all equipment functioned perfectly under this refrigeration. There was no provision in the setting for taking the flowing temperature of the gas.

While the dehydration plant provides protection from hydrate formation in the 14-in. transmission line, there remained the problem of protection for the gathering and trunk system upstream to the plant.

Injection of fluids, such as calcium chloride brine or diethylene glycol into the lines on the eve of cold weather period was considered and rejected due to possibilities of setting up internal corrosion with the calcium chloride or hazarding solidification of the glycol at the pressures involved. There would also be the problem of recovering these fluids and reactivating them.

Heated Gas Solves Problem

Heating the gas after it passed from the well separators and meters seemed to be the practical answer to this problem. Such heaters were installed on several of the wells with sufficient capacity to hold the gas at the inlet of the dehydration plant at no lower than 55° F.

The 14-in. transmission line proper is designated as beginning at the Logansport dehydration plant and ending with the receiving station at Perryville, a distance of 125.07 slack chain miles.

Experience so far indicates a close conformity in flow to Weymouth's formula; however, no tests at various initial and terminal pressures have yet been made. We anticipate conducting tests of this character during the coming summer. Fortunately, such tests will be simplified since there are no permanent taps on the line for disposition of gas between the initial and terminal points. With the trend in the design of gas transmission systems tending as it has in recent years toward increased operating pressures, this high pressure pipeline presents, especially for pipeline flow characteristics and the influence of super-compressibility on capacity, the opportunity for an interesting study.

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Rockland's Reduced Rate Schedule Approved by FPC

A schedule of reduced rates for electric energy and natural gas sold by the Rockland Light & Power Co., Nyack, N. Y., to its wholly owned affiliate, the Pike County Light & Power Co., Milford, Pa., has been approved by the Federal Power Commission and is to become effective as of Jan. 1, 1943.

The order states that the new rate schedules will result in annual reductions in wholesale charges for electric energy of about $6800 and of about $500 a year for natural gas. These reductions may be passed on to Pike County's residential customers under an order of the Pennsylvania Public Utility Commission dated Feb. 24, terminating its rate proceedings against Pike County Light & Power Co. and directing the filing of reduced residential rates.

The Wartime Tasks of INDUSTRIAL and COMMERCIAL GAS

(A Symposium)

1. Data on Gas Immersion Tube Heating

DR. F. E. VANDAVEER, assistant director, American Gas Association Testing Laboratories, Cleveland. Excerpts from a paper, "New Developments and Data on Gas Immersion Tube Heating."

GAS-FIRED immersion tube heating has had remarkable growth in recent years. It is now employed over a wide temperature range and the tube principle has been extended from heating liquids to higher temperature furnace work with so-called "gas radiant tubes." Its uses are numerous, including such diversified applications as cooking and pasteurizing of foods, cleaning, pickling, heat treatment of metals, and soft metal melting. In spite of this rapid development and widespread usage, further expansion in such fields will be more and more dependent on scientific studies.

Anticipating a need for basic data, the American Gas Association Committee on Industrial Gas Research, with J. W. Batten, vice-president and general manager of the Michigan Consolidate Gas Co. as chairman, initiated a fundamental research project on immersion tube heating. It was assigned to the American Gas Association Testing Laboratories as Project No. 47, "Research in Gas Immersion Heater Design and Operation." At the last Industrial and Commercial Gas Conference in Pittsburgh in March, 1942, a preliminary report, including a technical discussion of principles of heating with immersion tubes, objectives of the project, and a working outline for its conduct, was presented. It is the purpose of this paper to review briefly, research completed during the past year.

A. Immersion Tube Heating of Deep Fat Fryers

One of the most common, and probably the most widespread, applications of immersion tube heating is in deep fat fryers. Thousands of these units are in daily use not only for civilian purposes, but also for our armed forces. They are particularly popular in preparing French fried potatoes. To fortify and extend this general class of business against severe competition, methods for increasing speed of heating and faster production of fried foods than can be attained by present-day equipment must be developed. It has been stated that additional stack on the appliance would not be objectionable in attaining this accelerated rate of performance.

The initial series of studies was therefore devoted entirely to this application of gas immersion tube heating. For this work four contemporary models of deep fat fryers of different size and design and employing immersion tubes was secured. Tests for combustion, heating speed, burner and pilot operation, thermal efficiency, temperature of tube wall and of cooking oil at different levels, and noise of operation were conducted both on fryers as received from the manufacturers and after making numerous changes in input rating, stack height, and tube baffles. No changes were made in tube size or length as these factors were studied in connection with other types, sizes, and designs. Results of this work have been presented in the form of a mimeographed progress report to the sponsoring committee and to the four cooperating manufacturers in Research Report No. 973, entitled "Gas Immersion Tube Heating of Deep Fat Fryers." The appliances studied, as well as the flue pipe and baffles employed, are shown in Fig. 1.

PRESENTED ON these pages are excerpts from some of the papers presented before the American Gas Association War Conference on Industrial and Commercial Gas held by the Industrial and Commercial Gas section in Detroit, Mich., March 11 and 12, 1943.

Experiments were conducted to determine heating speeds from a cold start with both cooking oil and water as heating mediums. Cooking oil was heated from room temperature through a rise of 300 degrees F., while water was heated through a temperature rise of 140 degrees F. It was found possible to increase heating speeds on the average of 40.0% with water as a heating medium and 37.3% with cooking oil. A typical example of increase in heating speed of one of the deep fat fryers is illustrated by Fig. 2. This improved performance was accomplished with a relatively small increase in total gas consumption, the over-all average being about 15.0%. Methods employed consisted of addition of internal tube baffles and increase in stack height and input rating as shown in Fig. 2. On the average, baffling was about doubled and gas input rate increased about 85%. No stack heights above 6 ft. were used. This increased performance was accomplished within limits of good combustion and indicates that faster heating speeds can be obtained on contemporary types of equipment without major changes in their design.

Increase in input rating by increase in vertical flue pipe section (if that is permissible) and proper balancing of baffle resistance in the immersion tube permitted considerable gain in speed at nominal sacrifice in thermal efficiency and only slight increase in gas consumed. At the extreme higher heating speeds attained, flue losses were in the neighborhood of 40%. Although such losses might be permitted where competitive gas and electric rates are favorable to gas (generally speaking natural gas), accompanying high flue gas temperatures would be too high to insure a reasonably long life of the appliance.

A series of three efficiency tests was made on each unit at high, low, and

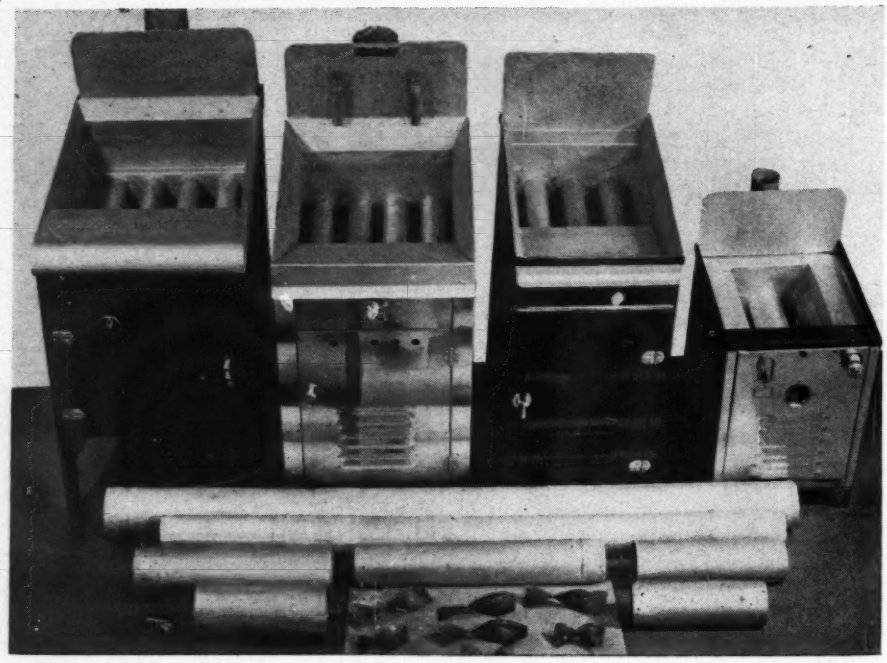

FIG. 1. Deep fat fryers used in this investigation, showing gas immersion tubes. Different lengths of flue pipe and spiral baffles used with them in the foreground.

normal gas input ratings. A power burner was employed on one fryer to secure data over a wider range of input ratings than could be obtained with the atmospheric gas burner with which it was normally equipped. Efficiecy was found to decrease on an average of 12.5% (actual) with an 82.6% increase in input rating. Even though the efficiency decreased, there was a substantial increase in the output of each fryer. This is illustrated by Fig. 4, which is an average curve for all four fryers studied. This curve indicates that the output doubled for an increase in gas input of less than threefold within the range of inputs employed on all four fryers.

Five other conclusions based on data presented in Research Report No. 973 are listed below:

1. Employment of a high primary air, short flame atmospheric burner, or a power burner liberating its heat at tube entrance, would permit great increase in speed of heating and use of less gas during heating-up period with other performance features within acceptable limits. Test results on one fryer with improvised power burner confirm this statement, permitting a time of heating decrease from 16.4 to 8.9 minutes and use of 500 Btu. less gas in the process.

2. More attention in design of fryers to distribution of temperatures along tube walls should permit less differential in temperature between walls and oil. On one fryer the wall temperature at end of heating-up period was 170 degrees F. higher than the oil temperature, whereas on another fryer this differential was only 50 degrees F.

3. For good heat transfer it would be expected that tube wall temperatures should be as high, or higher, near burner end as at flue end. Two of the four fryers tested at a high input rating had highest wall temperatures at flue end.

4. To maintain oil in crumb receptacle below tubes at low temperature, a distance of more than one inch between tube and bottom of compartment is needed. Fryers giving best results had a clearance of at least 2⅝ in.

5. Noise of operation of fryers was caused by inspiration of primary air and combustion. If this noise of about the same level as typewriter noise is objectionable, it is believed it could be corrected by proper design of burner or use of a simple muffler around the primary air inlet portion of burner.

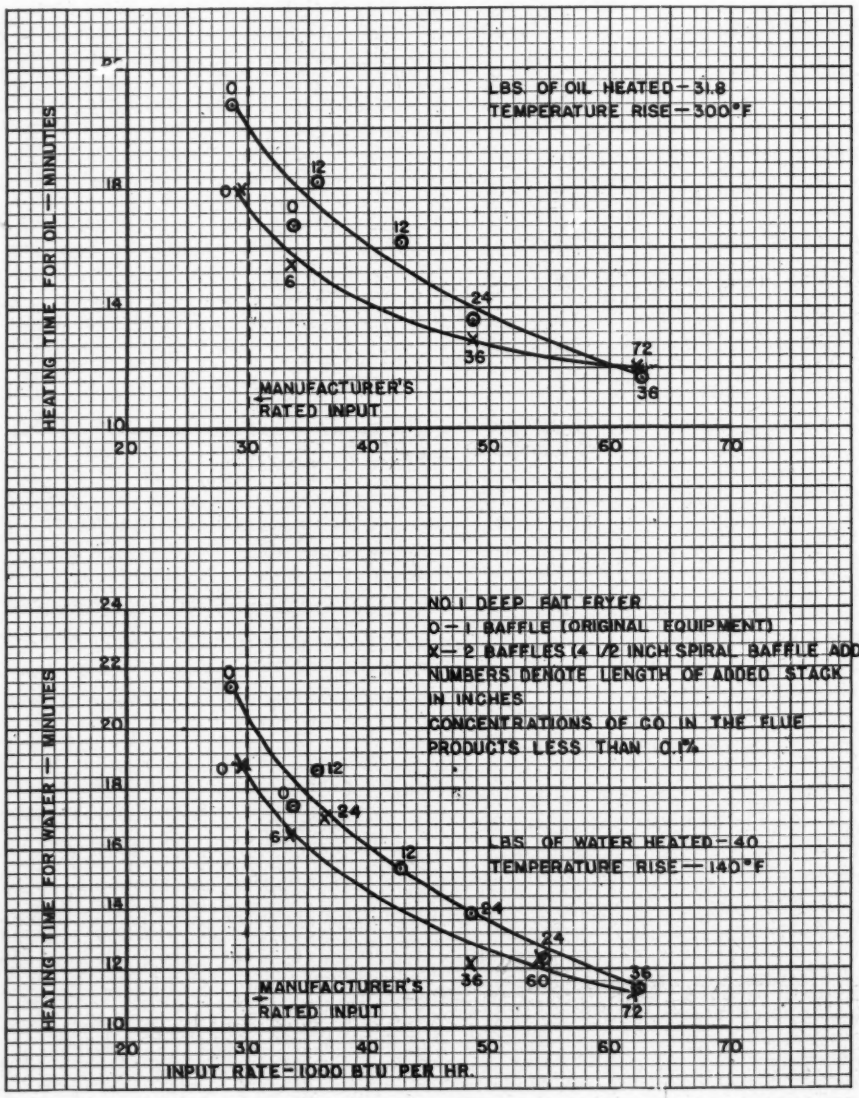
HEATING TIME FOR OIL — MINUTES
LBS. OF OIL HEATED = 31.8
TEMPERATURE RISE = 300°F
MANUFACTURER'S RATED INPUT
HEATING TIME FOR WATER — MINUTES
NO. 1 DEEP FAT FRYER
O = 1 BAFFLE (ORIGINAL EQUIPMENT)
X = 2 BAFFLES (4 1/2 INCH SPIRAL BAFFLE ADDED)
NUMBERS DENOTE LENGTH OF ADDED STACK IN INCHES
CONCENTRATIONS OF CO IN THE FLUE PRODUCTS LESS THAN 0.1%
LBS. OF WATER HEATED = 40
TEMPERATURE RISE = 140°F
MANUFACTURER'S RATED INPUT
INPUT RATE = 1000 BTU PER HR.

FIG. 2. Effect of gas input to Fryer No. 1 on heating speed with one and two sections of spiral baffle with various stack heights.

B. Performance of Various Sizes of Tubes

Research is now in progress on performance of various sizes (1 to 4 in. diameter) of immersion tubes with power type burners. Eventually tubes of various pipe sizes up to 6 in. I.P.S. will be included in this study. Initial tests were made with U-shaped tubes from 1 to 4 in. I.P.S. sizes having three right angle turns immersed in tanks of water. Two different lengths were used for each size—approximately 75 and 100 in. A second series of tests is now under way on straight lengths up to 14 ft. of different size tubes having only one 90 degrees ell and a short riser pipe.

Efficiency tests consisting of evaporation of water in an open tank were first used as a measure of performance of the various immersion tubes. This method proved rather inaccurate so it was decided to substitute an accurate flue loss determination as a criterion of performance. To place all tests on a comparable basis, air for combustion was regulated to provide a CO^2 content in flue products of 10.0%. All tests were made on natural gas with an ultimate CO^2 content of 12.2%. The 10% figure was selected as it would provide relatively high efficiency and at the same time permit satisfactory combustion at high input rates.

When data were plotted on semi-logarithmic paper on the basis of Btu. input per square foot of internal tube surface against efficiency (100% flue loss%), a series of parallel curves was obtained. These are shown in Fig. 4 for tube sizes on which data have been completed to date. These curves were plotted from data on all lengths of tubes used, as well as for different diameters of burners used in each tube. In other words, the rate of heat transfer on the basis of B.t.u. per hour per square foot of internal tube surface was found to be the same for either length of tube used (75 to 100 in.) and might justifiably be extended to other lengths within a range that would provide reasonable efficiency. Likewise, increasing the diameter of the flame with a larger burner did not increase performance as might be expected from closer proximity of flame to tube. These results,

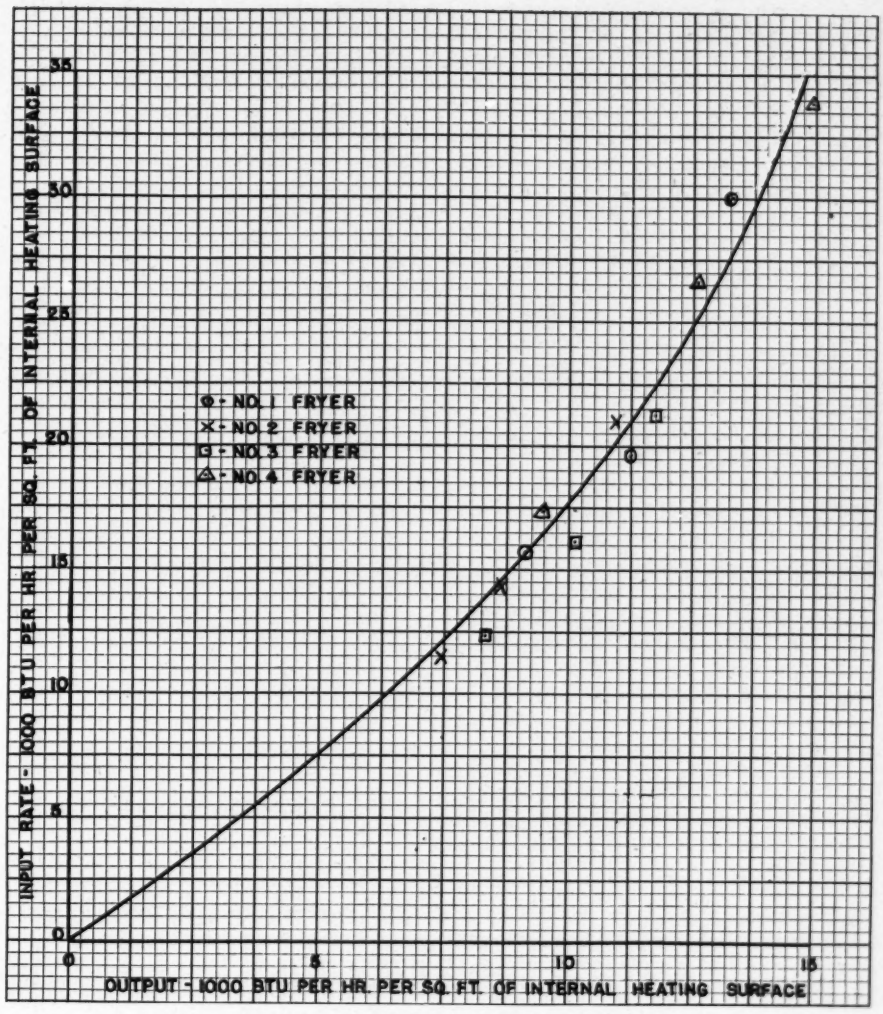

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FIG. 3 (ABOVE)

Relation of heat output to input for four deep fat fryers.

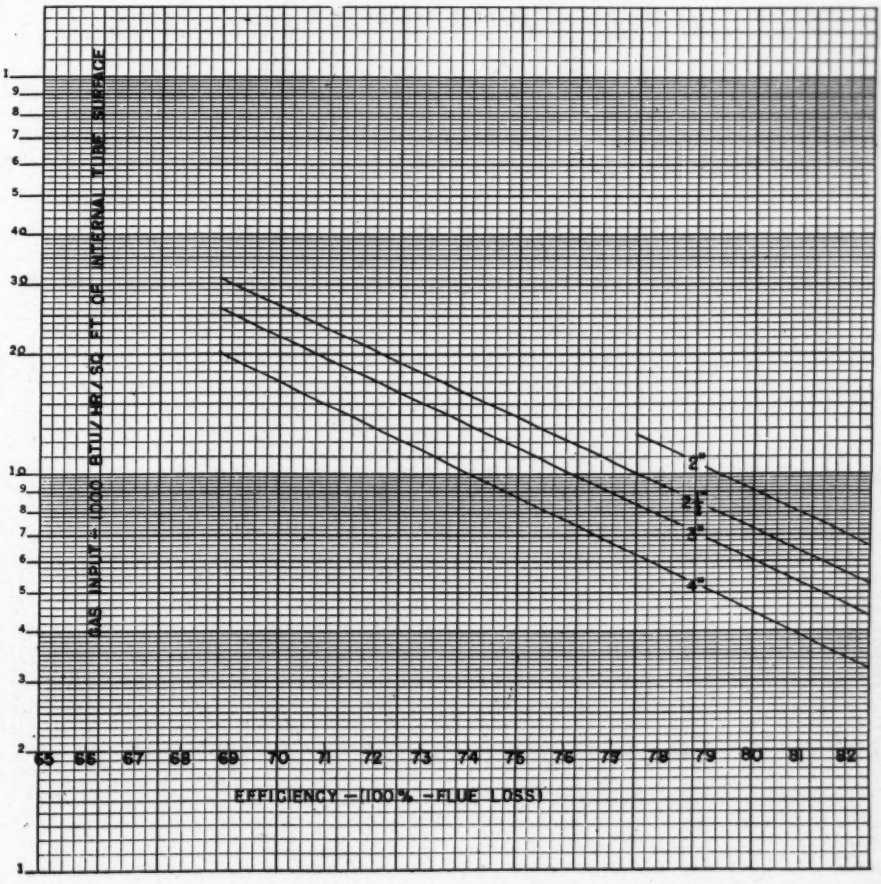

FIG. 4 (BELOW)

Efficiencies of "U"-shaped gas immersion tubes of 2-in. to 4-in. I.P.S. diameters over range of gas input ratings.

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as illustrated by Fig. 4, clearly show that for a given area of heating surface, smaller diameter tubes are much more efficient than those of larger diameter for transferring heat from flame to heating medium. For example, at an efficiency of 77.5%, a 4-in. tube had a gas input rate of 6300 B.t.u. per hr. per sq. ft. of internal heating surface compared with 8400, 10,000, and 12,800 for 3-, 2½-, and 2-in. tubes, respectively. No doubt, higher input rates will be found on still smaller sizes, but data on these are not yet completed.

In an attempt to secure high rates of heat transfer with a high input rating, various combinations of tube sizes were employed. These consisted of a short length of 4-in. pipe connected to single and dual coils of both 2- and 1½-in. pipes. The rates of heat transfer with these units were approximately the same as those obtained with the smaller size of pipe employed in them. In addition, gas input rates were very little higher than could be obtained if gas were fired directly into the smaller tubes. However, with still smaller sizes of tubes, a short section of larger diameter pipe in the combustion zone would probably be desirable to improve combustion. Such an arrangement may show up to even greater advantage with atmospheric type burners. These preliminary trends will be investigated further during the course of future work which will include studies of tube design for power, atmospheric, and induced draft type burners. In addition, a thorough study will be made on the effect of internal baffles on immersion tube efficiency. Results of initial tests indicate that baffles will increase the rate of heat transfer considerably on larger diameter tubes. For example, the use of a 1¼ in. I.P.S. pipe baffle with closed ends located concentrically in a 4-in. immersion tube increased the rate of heat transfer to approximately that obtained with a plain 2-in. tube.

Measurement of noise on various size tubes was made with noise level meters. As tube size was increased from 2½ to 4 in., noise increased from 80 to 111 decibels. The higher level was particularly objectionable, approaching that of an airplane engine and propeller at 10 ft. (120 db). Threshold of feeling is 130 db. Some attempts have been made, with fair success, to reduce this noise by using sound wave interference, attaching a pipe of proper length at center of tube. This method has been quite successful in reducing gas furnace noise, but requires further study before an adequate solution to reduction of noise in immersion tubes may be accomplished.

2. War and Post-War Industrial Equipment

E. G. de CORIOLIS, research director, Surface Combustion Corp., Toledo, Ohio. Excerps from a paper, "Industrial Gas Equipment of the War and Post-War Periods."

MANY hours could be spent in describing the considerable number of war applications in which the combination of radiant tubes and prepared atmosphere are playing an important part. One particular and very recent development deserves special mention. It is the prepared atmosphere quench. In the heat-treatment of seamless tubes it had been the practice to anneal the tubing in the process of drawing it down to finished size. The earlier steps were usually carried out in direct-fired furnaces followed by pickling. As the tubes became smaller in diameter and more elongated, the annealing would take place in controlled atmosphere furnaces in order to better control the character of the metal surface for subsequent drawing.

When finished to size, the tubes were usually freed from drawing compound and bright normalized in radiant tube roller hearth furnaces with elongated cooling zones. Seamless tubes becoming an important component of aircraft, with required close metallurgical specifications, it was found necessary to control the cooling rate by slightly hastening it as the tube left the furnace and entered the cooling zone. This was achieved by the addition of a fan to agitate the atmosphere within the cooling zone.

More recently, new methods have come into use in producing the tubing by welding from a strip. This type of aircraft tubing is much more difficult to heat-treat and will fail to meet specifications if processed through furnaces designed for seamless tubes. It was necessary to develop a radically different method of cooling. Powerful fans, one above and one below the level of the roller conveyor in the cooling zone now circulate the prepared atmosphere through refrigerator coils and the cold atmosphere strikes the tubes, top and bottom, at cyclonic speeds resulting in a veritable quench. About 50% of the tube heat imparted into the tube as it travels through 55 ft. of furnace is absorbed by the atmosphere in the first 4 ft. of the quenching zone. In terms of time this is equivalent to reducing the tube temperature down to black heat in 30 seconds.

Meanwhile, since the furnace inlet and the cooling zone outlet are open to allow for constant ingress and egress of the tubing, it is necessary to so delicately balance this internal cyclone that air does not intrude at either end, the while the flow of atmosphere gas steadily exudes at these openings and burns with a steady blue flame. By controlling this "gaseous quench" the physicals of the treated tubes may be made to conform to exact specifications.

Forced Convection Furnace

Another field in which industrial gas has played an important part is in the utilizations of the forced convection furnace. The air-draw furnace of the tool room and small production shop has been a familiar piece of equipment for several years. But the application of convection heating on a large scale has been almost wholy a war development.

Generally one is inclined to limit refinements in heat-treating to the tool room and automotive plants. In more recent years the non-ferrous industry: copper, brass and aluminum, has made increasing use of convection heating for its various processes, particularly where close control of grain size was found necessary. But it remained for the present war effort to demonstrate its effectiveness in the heat-treatment of armor plate.

Here is an ancient art which had depended solely upon human skill in performing a heating operation fully as delicate as that of any tool room process. Plates over 30 ft. in length and weighing a great many tons have to be heated at temperatures which differ from one end to the other. This is due to the composition of the steel which cannot be made uniform lengthwise. And differences of 10 degrees F. have to be within the control of the operator. Heretofore this had been attempted by having a great many thermocouples welded to the underside of the plates and firing overhead by hand-controlled burners. And only a single plate could be heated in the furnace at any one time although in terms of capacity these furnaces could have held many times the tonnage.

The adoption of convection heating has revolutionized this process. Plates are now heat-treated accurately, still maintaining a different temperature

from one end to the other. The control is accomplished by predetermined and automatic means as directed from the laboratory. And of no less importance from a production viewpoint is that several plates can now be charged simultaneously, thus considerably increasing tonnage output.

Heat Treatment Accuracy

Accuracy of heat-treatment can be further illustrated by the notable performance of furnaces for high explosive shell. Some time before Pearl Harbor one of the arsenals had been working on the development of methods which would produce shell of high physicals with constancy and uniformity. They realized then that whenever an emergency would occur they would have to be prepared to produce shell in a great number of plants unaccustomed to refined heat-treatment. The equipment to be selected, therefore, had to be of a type capable of operating automatically, beyond the control of shift operators, and so timed as to produce a high degree of uniformity regardless of the flow of work to the furnace.

The steps in realizing this objective included the adoption of the alloy walking beam as a furnace mechanism which was capable of accurate timing coupled with absolute uniform heating of the shell, whether it came singly or in scores to the furnace loading forehearth. The furnace was burnered with a wide range of turndown capable of taking any load within its capacity and maintaining the same rapid rate of heating of the shell. Tied in with the walking beam mechanism was an internal jet quenching device which hit the inner base of the shell with a powerful jet, this at the point of maximum strain of the projectile and where rapid quenching was most desired.

The thoroughly quenched shell then entered a convection heated draw furnace where the same quality of heating and constancy of motion was maintained by another synchronized walking beam. All these component parts operated as a single mechanism. When the crucial test came this highly refined gas-fired equipment more than vindicated the confidence of the arsenal's foresight.

When suddenly, after shell manufacturing plants had already got into war-time production, it was found necessary to change the steel, which now made it mandatory to heat-treat all shell, this equipment was ready to perform. It carried into those plants which heretofore had had no experience in the heat-treatment of shell, the same degree of accuracy which had been developed by the arsenal during the previous peace-time period.

When convection was applied to the tempering step considerable improvement resulted. The complete operation of hardening, quenching and tempering was also greatly facilitated by the adoption of the alloy walking beam in both furnaces and the mechanized internal quench tied in with the motion of the beams. All these refinements brought about unit heat-treatment in the sense that the flow of shell could be varied from full furnace to practically no flow without affecting the quality of any shell going through.

This peace-time development became of extreme importance when it was decided to swing the total production to full heat-treated shell. Many plants that had had no previous experience in heat-treatment were able to enter the field for this type of shell with a notable record of performance due to the reliability and constancy of the method and equipment adopted for this process.

One thing is certain. After a brief breathing period the tempo of industrial progress will accelerate at a pace heretofore unknown. Competition will spring from unexpected quarters. Obsolescence of equipment will be no quicker than obsolescence of kinds of business. In other words, there is no assurance that one shall continue to sell industrial gas and gas-fired furnaces. Whatever it may be that will be sold, the world will continue to pay tribute to those individuals, groups and businesses that stand at the forefront of progress in rendering a better service than had been rendered heretofore.

And the same methods which have so well succeeded in the past will again succeed in the future—that unremitting effort which is compounded of research, cooperation, foresight and tireless work. It is a prescription which has never failed any business, anywhere, at any time.

3. Aluminum and Magnesium Heat Treating

C. GEORGE SEGELER, engineer of utilization, American Gas Association, New York City. Excerpts from a paper, "Application of Gas to Aluminum and Magnesium Heat Treating."

THE accelerating growth of aluminum production, most of which will require heat treatment, opens a present and future market for industrial gas and industrial gas equipment and accessories. The field is so large that steps should be taken now to assure the future position of gas. This indicates a need for close cooperation among equipment manufacturers and gas companies so as to be sure that the right kind and size of furnaces are on the market to take care of the needs of aluminum producers and fabricators.

American Gas Association's Project No. 1 Subcommittee of the Metal Treating and Melting Committee feels that present specifications for aluminum alloy heat treatment are sufficiently broad that they do not interfere with the successful applications of gas heat.

Evidence has already been collected that certain alloys can be effectively heat treated by means not permitted by present government specifications, that is, by means of direct-fired gas furnaces. It is recommended that work be continued to determine exactly which alloys fall in this category and why they can be handled so successfully with direct heat. When this information is at hand, representations should be made to specification-writing groups to secure recognition of the facts.

Certain casting alloys, especially secondary metal, can be given a stabilized anneal at lower temperatures and shorter periods than the standard heat treatment without causing too great a loss of physical properties. A limited field of application exists for material heat treated in this manner. It should be explored to determine the limits of usefulness.

The difference in behavior between wrought and cast alloys has been reviewed in this paper, and this discloses the reason why fast, sharp quenching is needed for most wrought alloys after solution heat treatment. Such a requirement imposes limitations on furnace design. There appears to be room for considerable development of gas equipment for such purposes. At the present time, no gas equipment exists for handling long extruded shapes requiring this treatment. Although the work of Project No. 1 Subcommittee has been confined principally to heat treating, many other applications for gas heat exist in the aluminum industry.

Although no figures are yet available as to the probable total production of magnesium, it seems fair to predict that light weight magnesium alloys requiring heat treating will be increasingly important for aeroplane, automobile, and other postwar civilian uses. It therefore is important to establish as soon as possible satisfactory methods of heat treatment which use gas ovens. Up to the present time,

there has been a tendency to recommend electric equipment or indirect gas furnaces, with sulphur dioxide protection.

At least one well-known foundry, Superior Bearing Bronze, Brooklyn, N. Y., is using direct-fired recirculating gas ovens to produce superior heat treated castings which are excellent in appearance and meet specifications for physical properties with a minimum of rejects.

The direct fired gas furnace reduces the total concentration of oxygen in a furnace on account of the flue products which are produced. Thus the tendency to oxidize magnesium should be diminished by the presence of the flue products.

The castings produced in the direct gas-fired furnace are practically as smooth after heat treatment in contrast to the marked roughening and coarsening of the castings produced in electric furnaces with uncontrolled SO_2 atmospheres even though they pass specifications as far as the physical properties are concerned.

4. Developments in Furnaceless Heat Treating

FRED W. MARKLIN, chairman, subcommittee No. 2, AGA Metal Treating and Melting Group, Philadelphia Electric Co., Philadelphia, Pa. Excerpts from a paper, "New Developments in Furnaceless Heating Methods and Their Importance During the War and After."

FURNACELESS heating has been defined as "the heating of specific faces, projections or portions of metal parts above or below the critical temperature by means of open flame burner arrangements, and subsequent quenching or cooling to develop hardness or anneal, where desired, without affecting the core or body of the piece."

Furnaceless heat-treating is not entirely new, having been introduced perhaps a decade or so ago. But due to indifference, skepticism, or unwillingness to experiment, very little has been done to develop its full possibilities until recently.

There are probably a few operations where oxygen is absolutely necessary. But, except in special cases, its high cost, the complications involved, and the item of safety reduce its usage. Recent installations using air only indicate that a majority of jobs can be handled with present available equipment, where they could not have been a few years ago.

With improvements, ultimately 95% of all furnaceless heating jobs will eventually be worked out without the use of oxygen. This can be envisioned by the fact that there are now furnaceless burners that deliver at the rate of 40,000,000 Btu. per hour per cu. ft. of combustion space, whereas a few years ago it was possible to deliver only a maximum of about 4,000,000 Btu. per hour per cu. ft. That shows an improvement of 10 to 1! This perhaps can be extended further in proportion to the amount of effort put forth on development and research.

The importance of furnaceless heating during the present war can readily be seen by the ever increasing demand for "selective heat-treating" of ordnance and parts of war machines. This has been accomplished in open flame heat treat machines where time and temperature conditions of the selected sections can be finely controlled. This is in contrast to conventional furnaces which have in these cases proven unfit for the precise demands of that selection.

A partial list of processes now using the furnaceless gas heat-treating methods and ma[illegible] inc[illegible] hardening of teeth o[illegible]band saws, annealing, tempering, and hardening of parts of screws; annealing ends of springs; neck annealing of 20 mm. steel cartridge cases; neck and mouth annealing of 37 mm. to 75 mm. steel cartridge cases; annealing of non-ferrous wire; metallizing or spraying metals which include coatings of aluminum, babbitt, bronzes, cadmium, copper iron, lead, monel, nickel, solder, tin and zinc, scarfing of slabs or billets; silver soldering.

Also brazing, and descaling; edge rolling of metal containers; hardening of armor-piercing shot; hardening 18 different parts of anti-aircraft guns; hardening metal treads of caterpiller grousers; sprocket teeth for tank tracks; camshaft and gear hardening; pre-heating before hot working. It has even been published that a 6 ft. square of 16 in. armor plate with the enormous weight of 9 tons can be selectively heat-treated by the furnaceless method. This forecasts future possibilities not confined to so-called small parts but encompassing the entire field of heat-treating.

5. The War and Metal Treating with Gas

JOHN P. BROSIUS, chairman, AGA Metal Treating and Melting Group, Equitable Gas Co., Pittsburgh, Pa. Excerpts from a paper, "What the War Period Is Doing to Metal Treating With Gas."

THE war period is doing many things to metal treating with gas. It is vastly improving gas metal treating equipment. It is changing time-honored ways in which gas heat-treating equipment is being used by our customers. It is, in many ways, causing the mere Btu. cost of gas to assume a secondary role. It is setting new and higher standards that must be met.

But the war period is certainly causing many factory operators to reappraise gas, for better or for worse; and this reappraisal will be based on the war performances of gas and of other methods of heating. In short, while now using gas for heat-treating in unprecedented quantities — and using it well — industry is at the same time building up a challenge that we must face and meet.

Since he is working with a quality fuel, high in form value because processing has been performed on it before he takes over, the basic theme of the industrial gas utilization engineer has been and must be one of conservation. He must ever strive to improve the economic and technical adaptation and application of gas to industrial and commercial processes. He must apply these improvements in every way he can that will help war production. He must do that now wherever possible and he is doing it.

It is hard to conceive of a time when adequate service of this nature will be in more urgent demand or will bear more fruit. The gas industry, and the gas companies in particular, have an opportunity now through the service of gas for industrial and commercial purposes, not only to continue contributing much to the welfare of the country in this time of need, but also to permanently add to the prestige of gas in the industrial and commercial fields.

The future place of gas is being determined by the way in which the gas industry performs *now*. The war period is revealing many possible changes in the use of gas for metal treating. The attitude of customers towards the use of gas for post-war operations, the relative position of gas in industry in future comparison with its competitors, will depend on how the industry continues to grasp and take advantage of the present opportunity to be of help to industry.

(Excerpts from other papers presented before the March Conference of the Industrial and Commercial Section will appear in future issues.)

Panhandle Eastern to Acquire Illinois Natural

PANHANDLE Eastern Pipe Line Line Co. has asked SEC to approve its acquisition of all assets of Illnois Natural Gas Co. and Michigan Gas Transmission Corp., wholly owned subsidiaries. This action would mean the final dissolution of the two subsidiary companies and would simplify operations and operating costs, according to Panhandle Eastern's petition. The parent company owns all outstanding capital stock of both companies and in addition it owns indebtedness of Michigan Gas consisting of $5,900,500 face amount of 6% demand notes and $4,420,000 face amount of 6% demand loans.

The plan is for Illinois and Michigan to assign all their respective properties and assets to Eastern, which in turn will receive the same in complete liquidation of the two companies and will surrender for cancellation the shares of the stock, notes and loans it holds of the two companies. Eastern will assume all other liabilities of the subsidiaries, after which they will be dissolved. It is estimated that under this plan operating savings will amount to approximately $100,000.

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East Ohio Reveals Plan For 120-Mile Pipeline

Plans for the construction of a 120-mile pipeline connecting Maumee, Ohio, and East Ohio's Brush Farm station, five miles south of Breckville, have been made by the East Ohio Gas Co. and Panhandle Eastern Pipe Line Co.

J. French Robinson, president, East Ohio Gas Co., has announced that his company and the Kansas City, Mo., company will apply to the WPB for priorities on 22,500 tons of steel to construct the line at a cost of some $3,254,000.

A contract, subject to WPB's release of the required steel, has been signed by Mr. Robinson with the Missouri company for a minimum of 50,000,000 cu. ft. of natural gas daily through the proposed 20-in. line. This line would supply 60 northeastern Ohio communities with natural gas from Texas.

■ ■

Republic Natural to Lay Guymon Pipeline

Republic Natural Gas Co. has purchased a right-of-way for construction of a 16-in. pipeline from its holdings in the Guymon sector of Texas County, Okla., to connect with the transmission system of the Northern Natural Gas Co., three miles east of Hugoton, Kan.

The War Production Board recently prohibited further drilling in the Hugoton area of Oklahoma and Kansas, suggesting that gas purchasers connect to wells which have been without a market for several years.

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East Ohio Gas Increases Storage Facilities

In accordance with plans to expand its gas storage facilities, the East Ohio Gas Co., Cleveland, has been granted permission by the Ohio Public Utilities Commission to purchase natural gas production properties and equipment of several concerns in Stark county.

The proposed purchases by East Ohio include Timken Roller Bearing Co.'s gas production and gathering system for $95,000, a development project of George W. Crouse for some $24,000, wells and equipment of William F. and Carrie O. Pfeiffer for $50,000, and interests of H. E. Perkins for some $2200. The East Ohio total expenditures in the transaction will total approximately $171,500.

East Coast Emergency Line Approved

MOST important development of the month in PAW's program to carry oil by pipeline to the Atlantic seaboard was the announcement April 3 by Petroleum Administrator Ickes that WPB had approved the extension of the second War Emergency Pipeline all the war to the East coast (*GAS*, March, 1943, p. 55). WPB approval was given April 2, when its Requirements Committee found that the fabrication of the pipe can be scheduled without interference with other urgent war programs.

In spite of the progress made, however, PAW reiterated its warning that that there is still no assurance that civilian supplies of gasoline and heating oil will be ample next winter.

The Big Inch: The 24-in. War Emergency Pipeline, now in operation between Longview, Texas, and a temporary tank car trans-shipment terminal at Norris City, Ill., is contributing markedly to the increasing overland flow of petroleum to the eastern seaboard.

Meanwhile, construction crews, battling spring mud in the valleys and late snows in the mountains, have crossed the 200-mile mark on the 809-mile march from Illinois to New York and Philadelphia. Pipe laying is in progress on all 17 working spreads, and PAW appears confident that the line will be completed on schedule.

The "Big-Inch" completion schedule calls for oil to be flowing into the eastern refineries and storage terminals by early summer. Capacity operation at a rate of 300,000 bbl. a day is expected shortly after the start of full Texas-East Coast pumping operations. Twenty-five pump stations will drive a continuous stream of oil over the 1340-mile route.

Some of the contractors who built sections of the completed sections of the Big Inch line are: Williams Brothers, Tulsa; O. E. Dempsey Construction Co., Tulsa; Oklahoma Contracting Co., Dallas; C. S. Foreman Co., Kansas City, Mo.; Ray E. Smith Construction Co., Eldorado, Kan.; Sheehan Pipe Line Construction Co., Tulsa.

Little Big Inch: Construction of the first section of the $75,000,000 government financed 20-in. pipeline for petroleum products—from Texas to Indiana—was approved in January. Work will be undertaken on the eastern extension as soon as construction crews now rushing completion of the eastern leg of the 24-in. War Emergency Pipeline finish that line. At that time construction will progress simultaneously on both the Texas-Indiana and the Indiana-East Coast legs of the line.

Upon final completion, this "little big inch" pipeline will have a maximum delivery capacity of 235,000 barrels of petroleum products daily.

In his formal application to WPB for East Coast extension of the line, Administrator Ickes said:

> "We have the green light on materials, but between the refineries of Texas and actual deliveries of petroleum products at the eastern outlet of the pipeline there are 1390 miles of tough, exacting construction work and only 241 days for doing the job if we are to meet the schedule we have set."

Concurrently with the announcement of the extension of the 20-in. pipeline, Deputy Administrator Ralph K. Davies reported that contractors have been selected for construction of the Texas-Indiana leg of the line and that inital construction work will start within a few days. He said:

> "Sixteen survey parties are now staking the route of the pipeline between Texas and its intersection with the already established right-of-way of the 24-inch War Emergency Pipeline now in operation between Longview, Texas, and Norris City, Illinois.
>
> "Construction plans for the Texas-Indiana section of the new line call for simultaneous work on 10 construction spreads. One operation will involve the building of extensive feeder lines in the Houston refining area. The other nine construction 'spreads' will be main-line operations, each contractor building the pipeline over an assigned section, and so scheduling his work as to permit more or less simultaneous tie-in of all sections into a finished 824-mile tube, well in advance of Sept. 1."

The following contractors have been selected to build the Texas to Indiana section of the pipeline:

William Brothers Corp. (two spreads)
Sharman & Allen
N. A. Saigh Co.
Winston-Guthrie-Brown
B. & M. Construction Co.
Oil States Construction Co.
Swinerton & Walberg
Midwestern Engineering & Construction Co.
J. C. Truman

Pipeliners have already dubbed the 20-inch petroleum products line the "little big inch." It will require 280,000 tons of new steel. Eighty-four electric motors will turn up a total of 105,000 hp. to drive the 84 pumps required to move the 1390-mile continuous column of petroleum from Texas to New York and an additional East Coast terminus, not yet definitely determined.

Robert B. Harper, vice president of People's Gas Light & Coke Co., addresses Institute of Gas Technology students on the history and development of the gas industry. This talk and other similar lectures are a part of the seminar orientation course being offered at the Gas Institute.

Seminar Course Given at Gas Institute

FIRST-HAND information—brought to students by experienced leaders in the gas industry—is a feature of the educational program at the Institute of Gas Technology at Illinois Institute of Technology in Chicago.

A seminar orientation course on the gas industry is being presented at the Gas Institute. The course, begun last fall, features talks and discussions by members of the industry on various phases of gas technology.

The seminar program is arranged to cover the following major topics: history and development of the gas industry, production methods, by-products and synthetic derivatives, plant control methods and safety, distribution, corrosion, utilization, regulation and public relations, and future development.

The first major topic was covered by Robert B. Harper, vice president of the People's Gas Light & Coke Co. of Chicago. He gave a series of three lectures on the history and development of the gas industry and illustrated his talks with several charts.

Another seminar speaker was E. J. Gardner, superintendent of blast furnaces and coke plant of Inland Steel Co. Mr. Gardner spoke on "The Coke Plant—Its Functions and Operations."

Featured speaker at two meetings was R. E. Kruger, superintendent of gas manufacturing of the Rochester Gas & Electric Corp. He described plant operations and problems in the production of water gas and producer gas and devoted some attention to techniques of mixing gases to produce city gas of constant characteristics for home consumption.

Problems in utility management and regulation are also covered in the course. N. Henry Gellert, president of the Great Lakes Utilities Co., and a member of the Gas Institute board of trustees, gave two lectures on the Public Utility Holding Company Act.

New uses for gas is a subject which has been treated in one lecture and will receive attention in the future. Dr. E. W. Guernsey, assistant director of research of the Consolidated Gas Electric Light & Power Co. of Baltimore, addressed the seminar on "Manufactured Gas as a Raw Material for Synthesis."

Staff members and students also participate as speakers on the program.

Dr. Frederick W. Sullivan, Jr., technical director of the Gas Institute, recently spoke on the chemistry and economics of coal tar by-products. O. D. Cunningham, research associate, outlined techniques in the isolation of these by-products.

Early in the course, Dr. Julian F. Smith, technical librarian and editor, talked on the proper use of a technical library as an adjunct to a research program.

For several weeks the fellows conducted the seminar meetings as each one discussed some phase of his experience during employment training in the gas industry last summer. Their seminar topics included such subjects as "Flow Diagram of a Gas Manufacturing Plant," "Liquid Storage," "Testing and Correcting Industrial Meters," "Gas in Refrigeration and Air Conditioning," and "Engineering Problems in a Gas Appliance Laboratory."

This educational series has been made possible largely through the cooperation of the gas industry and allied companies in supplying speakers for the seminar group.

"Such prompt cooperation," said Dr. Lincoln R. Thiesmeyer, educational director of the Gas Institute, "is added evidence that the training program of the Gas Institute is regarded both as a worth-while activity in the war effort and as one that has permanent value for the future."

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FPC Institutes Investigation of Mississippi River Fuel Corp.

THE Federal Power Commission April 9 instituted an investigation of the Mississippi River Fuel Corp., Hope Producing Co., Southern Carbon Co. and United Carbon Co. The investigation is to determine (1) the reasonableness of Mississippi River Fuel Corp.'s rates in connection with the transportation or sale of natural gas subject to the commission's jurisdiction, and (2) whether the Hope Producing Co., Southern Carbon Co. and United Carbon Co. are natural gas companies within the meaning of the Natural Gas Act, and the reasonableness of these companies' rates in connection with the transportation or sale of natural gas subject to the commission's jurisdiction.

Mississippi River Fuel does not produce any natural gas, its requirements being furnished by United Gas Pipe Line Co., Interstate Natural Gas Co., Inc., Hope Producing Co., Southern Carbon Co. and United Carbon Co., all of which companies are affiliated with Mississippi River Fuel Corp. directly or indirectly through stock ownership.

■ ■

SEC Orders Liquidation Of North American Gas

Under the "death sentence" provision of the Public Utility Act of 1935, the North American Gas & Electric Co. has been ordered to liquidate its holdings.

The North American Gas & Electric holding company includes nine subsidiary companies, four of which are direct subsidiaries and five subsidiaries of Washington Gas & Electric, an intermediate holding concern.

■ ■

Lone Star Wins Franchise

The Lone Star Gas Co. won a franchise election in Denison, Texas, by a vote of 1221 to 721 on March 4. The city council had previously voted approval of the issuance of $600,000 in bonds to be used to purchase Lone Star's Denison distribution system and had also filed suit in the Sherman court to force the sale of gas distribution to the city.

ASSOCIATIONS

Varied Programs Planned for AGA Meetings

REPRESENTATIVES from all branches of the gas industry are planning to be present at the five important sectional meetings of the American Gas Association scheduled to be held during April and May.

All phases of the industry's wartime role will be outlined and appraised by leading gas and government officials, and from these addresses and open forum discussions are expected to come suggestions whereby the industry may further assist in the war effort.

Executive Conference

THE advisory council and executive board will meet at the Hotel Gibson, Cincinnati, Ohio, on Tuesday, April 27, to hear a variety of topics of interest to the industry discussed by authoritative speakers.

Among those scheduled to address the conference are: A. F. Bridge, president, AGA; N. C. McGowen, president, United Gas Pipe Line Co.; W. A. Dougherty, Standard Oil Co. of New Jersey; E. Holley Poe, director, Natural Gas & Natural Gasoline Division, Office of Petroleum Coordinator, Washington, D. C.; Paul R. Taylor, vice president, Consolidated Electric & Gas Co., New York; E. R. Acker, vice president, AGA; A. M. Beebee, chairman, post-war planning committee; C. V. Sorenson, supervisor, new business, Northern Indiana Public Service Co.; R. J. Rutherford, vice president, Worcester Gas Light Co.; R. E. Ginna, assistant to president, Rochester Gas & Electric Corp.; Hall M. Henry, Negea Service Corp.; Walter C. Beckjord, vice president, Columbia Gas & Electric Corp.; Frank H. Adams, president, Surface Combustion Division of General Properties Co., Inc.; and Dr. F. W. Sullivan, Jr., technical director, Institute of Gas Technology.

Natural Gas Conference

PRESENT and future trends of the natural gas industry will be the theme of the Natural Gas Management Conference to be held in Cincinnati on April 28, and which this year replaces the usual convention.

Discussions by both gas industry leaders and representatives of government war agencies will stress and elucidate the common efforts of these groups to bring about victory for the Allies.

Authorities from the fields of economics, technology and regulation will discuss other topics of interest and concern to the industry.

Speakers will include: A. F. Bridge, president, AGA, and vice president Southern Counties Gas Co., Los Angeles; Alexander Forward, managing director, AGA; B. R. Bay, chairman, natural gas section, AGA, and president, Northern Natural Gas Co., Omaha; E. Holley Poe, director, Natural Gas and Natural Gasoline Division, PAW, Washington; J. A. Krug, director, Office of War Utilities, WPB; L. T. Potter, chairman, Production Committee, Natural Gas Section, and chief production engineer, Lone Star Gas Co., Dallas; R. H. Ulrich, chairman, Transmission Committee, Natural Gas Section, and vice president, Southern Natural Gas Co., Birmingham, Ala.; R. E. Wertz, vice chairman, Natural Gas Section, AGA, and president, Amarillo Gas Co., Amarillo, Texas; E. R. Acker, chairman, War Activities Committee, AGA, and president, Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y.; Marshall Newcomb, Lone Star Gas Co., Dallas; Paul B. Coffman, vice president, Standard & Poor's Corp., New York, and K. S. Adams, president, Phillips Petroleum Co., Bartlesville, Okla.

A. F. BRIDGE
President, AGA

H. L. GAIDRY
Technical Chairman

Accountants Conference

MUTUAL problems affecting public utility accountants will be discussed when representatives from those departments of gas and electric companies meet at the Netherland Plaza Hotel, Cincinnati, on April 27-28.

The program has been prepared by O. H. Ritenour, Washington Gas Light Co., for the American Gas Association, and H. R. Flanegan, Philadelphia Electric Co., for the Edison Electric Institute. They have been assisted by a committee from each association.

The conference has been segregated into two parts, the group meetings to take place the first day and the general session to follow on the second day of conference.

Specific problems presented by the various accountants will be considered in the group session, while such timely topics as post-war planning, materials rationing, manpower problems and trends in regulations will occupy members at the general meeting.

L. A. Mayo, The Connecticut Light and Power Co., and F. B. Flahive, Columbia Gas and Electric System, will preside at the April 28 meeting.

Distribution Conference

AN INTERESTING and instructive agenda has been lined up for the Twentieth Annual Distribution Conference of the American Gas Association scheduled to be held in the Netherland Plaza Hotel, Cincinnati, on April 29-30.

Principal speakers on the first day of the conference include: A. V. Smith, consulting engineer, who will speak on "Cathodic Protection Interference"; R. F. Hadley, chairman, Susquehanna Pipe Line Co., Philadelphia, whose topic will be "Pipe Coatings and Corrosion"; and W. T. Collins, chairman, Ohio Fuel Co., Columbus, who has chosen "Work on Customers' Premises" as the subject of his talk.

Feature of the April 30 morning session will be the first showing of a pipeline film depicting the story of

They Head Conference Committees

A. C. CHERRY
Distribution

H. B. ANDERSEN
Distribution

T. L. ROBEY
Chemical

V. J. ALTIERE
Chemical

C. F. TURNER
Technical

E. W. ZIMMERMAN
Production

"Big Inch"—the world's largest pipeline for oil. The remainder of that session will be devoted to a panel discussion of emergency problems.

Other speakers at the conference will include J. H. Collins, chairman, New Orleans Public Service, Inc., New Orleans, and T. H. Kendall, chairman, Equitable Gas Co., Pittsburgh, Pa.

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Production and Chemical Committee Conference

MEMBERS of the Production and Chemical Committee of the American Gas Association will meet for a two-day conference at the Hotel Pennsylvania, New York, on May 24-25.

Papers will be delivered at the first morning session by E. R. Acker, chairman AGA Committee on War Activities; D. S. Reynolds, vice president, Boston Consolidated Gas Co., Boston; Louis Scnidman, laboratory director, Rochester Gas & Electric Corp., Rochester, N. Y., and Dr. E. W. Guernsey, chairman, subcommittee on Organic Sulphur, AGA.

The May 24 afternoon gathering will take the form of round table luncheon conferences to be conducted by P. T. Dashiell, vice president, The Philadelphia Gas Works Co., Philadelphia; Dr. F. H. Dotterweich, Texas College of Arts and Industries, Kingsville, Texas, and A. C. Sedlachek, Philadelphia Coke, Philadelphia.

The list of speakers for the May 25 meeting includes A. M. Beebee, chairman, AGA Committee on Post-War Planning; C. V. Sorenson, supervisor of New Business, Northern Indiana Public Service Co., Hammond, Ind.; R. J. Rutherford, vice president, Worcester Light Co., Worcester, Mass.; R. E. Ginna, assistant to president, Rochester Gas & Electric Corp., Rochester; Hall Henry, NEGEA Service Corp., Cambridge, Mass., and Walter C. Beckjord, Columbia Gas & Electric Corp., New York.

PCGA Home Service Leaders Hold Two-Day Conference

A conference, sponsored by the home service committee of the Pacific Coast Gas Association, was held in the Los Angeles office of the Southern California Gas Co. during the last week of February. Miss Katherine Rathbone, home service director of Southern Counties Gas Co., presided at the two-day session.

A symposium and round table discussion on current home service problems occupied the first morning session, and during that afternoon W. M. Jacobs, general sales superintendent of Southern California Gas Co.; Champ M. Reese, American Meat Institute; Charles E. Reifsteck, executive of the General Dairy Industry Committee; and Elsie Jensen, from the OPA, addressed the gathering on various home service topics.

The second day of the conference was concerned with the subject, "Nutrition in Industry," and that topic was expounded by C. A. Miller, regional sales manager of Servel, Inc., and A. J. Lorenz, director of nutritional research, California Fruit Growers Association. At the final session members discussed conservation of food.

■ ■

SCMA April Meeting

J. A .Campbell was the principal speaker at the regular monthly meeting of the Southern California Meter Association held at Downey, Calif., on April 15. His topic was "Practical Application of Boiler Feed Water Level Control," and he used many pieces of equipment to demonstrate the action of the thermostatic tubes under expansion, displaying the valve motivation by applying heat.

The second feature of the meeting was the presentation of a colored motion picture showing an oil field fire.

LEADERS OF THE AGA NATURAL GAS SECTION

Chairman Burt R. Bay

Mr. Bay is President and Director of Northern Natural Gas Co. and subsidiary companies, of Omaha, Neb., chairman of PAW Natural Gas and Natural Gasoline Committee for District No. 2, member of the General Committee for such district, also the Petroleum Industry War Council. Mr. Bay's association with the natural gas industry covers a period of 34 years. Starting work as a machinist in a compressor station, he advanced successively through the years and in the course of his employment has served in a supervisory or executive capacity for Cities Service Gas Co., Missouri-Kansas Pipe Line Co., Panhandle Eastern Pipe Line Co., and Northern Gas Co.

Vice Chairman R. E. Wertz

Ralph E. Wertz, president of Amarillo Gas Co., Amarillo, Texas, was born in Tipton, Iowa, Nov. 15, 1876.

He has been actively identified with the exploration, drilling, production and transmission of oil and natural gas for many years.

During the 14-year period from 1917 to 1931, Mr. Wertz was vice president of Producers & Refiners Corp., in charge of geology, drilling, production and pipe lines in the Rocky Mountain and Mid-Continent areas. Explorations under his direction resulted in the discovery of several important gas fields in the Rocky Mountain area. Among these were the Sand Draw Field, the Muskrat Field, the Ferris Dome Field, the Wertz Field (now producing oil also), and the Mahoney Dome Field, all in Wyoming; the Clay Basin Field in Utah and the San Juan Field in New Mexico.

Since 1931 he has been the chief executive officer of a group of companies in west Texas and New Mexico, engaged in the production and transmission of natural gas and the distribution thereof in 48 cities and towns.

Mr. Wertz is president and director of the Amarillo Gas Co., Panhandle Pipe Line Co., Amarillo; Dalhart Gas Co., Dalhart, Texas; Clayton Gas Co., Clayton, New Mexico; vice president and general manager, Amarillo Oil Co., and vice president of the Canadian River Gas Co., Amarillo, Texas.

Honoria B. Moomaw

Miss Moomaw has served as the acting secretary of the Natural Gas Section since June of 1942 when E. Holley Poe, who was then secretary of the section, was called to Washington as director of the Natural Gas and Natural Gasoline Division of the Petroleum Administration for War. Prior to that date she had served as secretary to Mr. Poe, first becoming affiliated with the Natural Gas Section in 1939.

Annual New England Gas Conference Held

"EVERY company member who attends should receive a wealth of information and ideas which will stand his company and him a good stead in these uncharted days." Thus spoke President John West of the 17th Annual Business Conference of the New England Gas Association which was held on March 18 in Boston.

Feature of the one-day program was the election of officers and directors, at which Norman B. Bertolette, president, The Hartford Gas Co., was elected as the association's chief executive for the coming term. He succeeds Mr. West, who is president of the Worcester County Electric Co. A complete list of the 1943-44 officers and directors appears in this issue.

Year's Activities Reviewed

The NEGA activities for the past year were reviewed by Clark Belden, executive secretary, when he told that much of the staff's work had consisted of compiling and issuing 498 war program releases affecting the gas companies. These have covered the orders, amendments, interpretations, revisions, rulings and suggestions of many governmental agencies.

Alexander Forward, managing director, American Gas Association, represented that group and, in speaking of the "Gas Industry Today" said, "Our natural gas companies have performed prodigies of executive and engineering efforts to produce, transport and deliver the gigantic quantities of gas needed for the war in which we are engaged."

"The services rendered by the home service department of the nation's gas companies are not only a vital contribution to the war effort, but also the best insurance of a live and progressive industry after this war is won," said George S. Jones Jr., vice president and general sales manager of Servel, Inc., Evansville, Ind., when he addressed the conference on "Home Service in Wartime—A Bill of Particulars."

"Post-war Planning From the Manufacturers' Standpoint" was the subject of an address by Col. Willard F. Rockwell, president, Association of the Appliance and Equipment Manufacturers, and president, Pittsburgh-Equitable Meter Co. Col. Rockwell is also director of production, U. S. Maritime Commission executive committee, army and navy munitions board.

In making his address, President West said that "the three most essential assets which any industry or any company can possess are personnel, capital and customers. Progress can be made only as long as industry is able to keep on attracting outstanding personnel, adequate capital and profitable customers. This fundamental principle cannot be disregarded."

When Mr. West chose the motto "Cooperation, Efficiency, Progress" as the one most applicable to the present New England gas situation, he said, "If we choose to intensify the first two of these three qualities in our industry, we shall have the third."

C. O. Ruggles, professor of public utility management and regulation, director of division of research, Harvard Graduate School of Business Administration, spoke on "Some Trends in Public Utility Regulation." Alexander Macomber, director, manufactured gas division, office of war utilities, WPB, also addressed the morning session.

At the afternoon session a panel on the subject, "Cold Weather Emergency Operations" was presided over by R. J. Rutherford, vice president, Worcester Gas Light Co. The various developments connected with material shortages, plant operation, distribution and utilization were discussed by gas industry members and officials.

Labor-Management Relations

E. C. Robbins, professor of industrial management, Harvard Graduate School of Business Administration, and E. Holley Poe, director of natural gas and natural gasoline, Office of Petroleum Administration for War, were also speakers during the afternoon. The former spoke on "Can Management and Labor Cooperate," and the latter on "Petroleum Industry Developments and Their Effect on the Gas Industry."

The gas industry's war activities were outlined by Ernest R. Acker, chairman, committee on war activities, AGA, and president, Central Hudson Gas & Electric Corp., who was the final speaker at the conference.

Pictured above are the new members of the New England Gas Association executive group for the year 1943-44. FRONT ROW, left to right: H. M. Henry, Negea Service Corp., Cambridge, first vice president; John West, president, Worcester County Electric Co., past president; N. B. Bertolette, president, The Hartford Gas Co., president-elect. BACK ROW, left to right: D. S. Reynolds, vice president and engineer, Boston Consolidated Gas Co., second vice president; Clark Belden, Boston, executive secretary; and E. H. Eacker, vice president, Boston Consolidated Gas Co., treasurer.

Maintenance Discussed at PCGA Meeting

A TWO-DAY conference of the construction and maintenance group of the Pacific Coast Gas Association was held in Los Angeles on March 31 and April 1. Sponsor of the meeting was Elting Henderson, general superintendent of distribution, Southern California Gas Co., Los Angeles.

First speaker at the morning session was K. B. Anderson, superintendent, gas department, Coast Counties Gas & Electric Co., who spoke on general organization of emergency set-ups. War games was the topic of a talk by B. A. Devine, special representative, Southern Counties Gas Co. Emergency stream crossings were discussed by C. P. de Jong, supervisor, gas distribution department, San Diego Gas & Electric Co.

Methods of purging pipelines were discussed by two speakers at the conference. J. L. Oberseider, assistant research engineer, Southern California Gas Co., dealt with the process of purging the lines with inert gases, while N. Senatoroff, research engineer, Southern Counties Gas Co., spoke of purging 36-in. pipelines.

Wartime pipeline maintenance policies were outlined by W. L. Kindred, assistant district superintendent, Southern Counties Gas Co., during the morning session on April 1.

Roger N. Townsend, engineering assistant, Southern California Gas Co., spoke on the Sheperd Rod—an electrical instrument to test conductivity and resistivity of soil to electric current.

A threefold address was given by C. F. Briscoe, division engineer, Southern Counties Gas Co., on such topics as portable equipment for stream crossings, use of carbon dioxide in extinguishing gas fires, and vegetation leakage survey.

Future meetings of the Pacific Coast Gas Association have been scheduled, among which is the technical section meeting on April 21-22 in Los Angeles. Chairman C. D. Weiss, San Diego Gas & Electric Co., will preside at the meeting, the topic of which is to be "Transportation."

The accounting section meeting is set for May 5-6 in the Southern California Gas Co. Building, Los Angeles, with Chairman Paul Walters, Southern California Gas Co. in charge.

"Measurement and Regulations" will be the subject of the technical section meeting to be held May 19-20 in Los Angeles. H. A. Faull, Southern Counties Gas Co., will be chairman of the gathering. The executive conference of the sales and advertising section is scheduled for Portland, Ore., on June 23-24.

1943-1944 OFFICERS AND DIRECTORS OF NEW ENGLAND GAS ASSOCIATION

Officers

President: Norman B. Bertolette, president, The Hartford Gas Co.

First Vice President: Hall M. Henry, Negea Service Corp., Cambridge.

Second Vice President: David S. Reynolds, vice president and chief engineer, Boston Consolidated Gas Co.

Treasurer: Earl H. Eacker, vice president, Boston Consolidated Gas Co.

Clerk: Clark Belden, executive secretary, The New England Gas Association, Boston.

14 Elective Directors

Directors-at-Large: Rollin Buckminster, Blackstone Valley Gas & Electric Co., Pawtucket; James A. Cooks, general manager, Lynn Gas & Electric Co.; George R. Copeland, regional representative, Servel, Inc., Boston; E. M. Farnsworth, president, Boston Consolidated Gas Co.; Edwin L. Hall, treasurer and manager, Manchester Gas Co.; Isaac S. Hall, vice president, Springfield Gas Light Co., Boston; L. E. Knowlton, engineer, Providence Gas Co.; A. V. S. Lindsley, vice president in charge of sales, The Connecticut Light & Power Co., Waterbury; Irwin L. Moore, president, New England Power Association, Boston; R. E. Ramsay, president, New Haven Gas Light Co.; P. J. Rempe, vice president, Stone & Webster Corp., Boston; John J. Scott, general manager, Lewiston Gas Light Co.; Edward G. Twohey, manager, Northampton Gas Light Co.; Alexander McW. Wolfe, manager, Nathaniel Tufts Meter Works, Boston.

10 Ex-Officio Directors

Five most recent Past Presidents (1942-43); John West, president, Worcester County Electric Co.; (1941-42) Charles G. Young, manager, Springfield Gas Light Co.; (1940-41) John A. Weiser, president and general manager, The Newport Gas Light Co.; (1939-40) R. J. Rutherford, vice president, Worcester Gas Light Co.; (1938-39) George S. Hawley, president, The Bridgeport Gas Light Co.

Division Chairmen

Accounting: Edwin F. Embree, auditor, New Haven Gas Light Co.

Industrial: George A. Carlson, Fitchburg Gas & Electric Light Co.

Manufacturers: George P. Velte, regional representative, American Stove Co., Boston.

Operating: Irving J. True, superintendent of production, Providence Gas Co.

Sales: Roy E. Wright, director of gas sales, New England Gas & Electric System, Cambridge.

Home Service Group

Chairman: Hazel Cheever, home service director, Arlington Gas Light Co.

Secretary: Susan Mack, home service director, Boston Consolidated Gas Co.

New England Group Forms Economic Survey Committee

AS a result of action taken by the directors of the New England Gas Association at their meeting in Boston on March 17, retiring President John West appointed an economic survey committee with J. A. Cook, general manager, Lynn (Mass.) Gas & Electric Co., as chairman.

The purpose of the committee is to study the advisability of sponsoring for the New England gas companies, as a regional group, a comprehensive survey, the object of which will be to explore all practical possibilities for efficiencies and improvements, processes and new markets, and thus better equip the New England companies in preparing for post-war conditions.

Other members of the committee are:

F. L. Ball, president, Malden & Melrose Gas Light Co.; E. H. Eacker, vice president, Boston Consolidated Gas Co.; E. L. Hall, manager, Manchester Gas Co.; H. M. Henry, Negea Service Corp., Cambridge; R. N. Hill, president, Green Mountain Power Corp., Burlington; L. E. Knowlton, engineer, Providence Gas Co.; A. V. S. Lindsley, vice president, the Connecticut Light & Power Co., Waterbury; R. E. Ramsay, president, New Haven Gas Light Co.; P. J. Rempe, president, Stone & Webster Corp., Boston; R. J. Rutherford, vice president, Worcester Gas Light Co.; W. C. Slade, gas engineer, New England Power Service Co., Boston; G. W. Stiles, vice president, Portland Gas Light Co.; J. A. Weiser, president and general manager, the Newport Gas Light Co.; C. G. Young, manager, Springfield Gas Light Co.

Ex-officio: N. B. Bertolette, president, the Hartford Gas Co.

Oklahoma Utilities Group Holds One-Day Conference

A one-day conference at the Tulsa Hotel, Tulsa, Okla., March 22, replaced the usual annual convention of the Oklahoma Utilities Association.

Speakers in the general conference included: J. A. Whitlow, Public Service Co. of Oklahoma, who discussed various phases of the manpower problem; Ben R. Newbery, Lone Star Gas Co., Dallas, Texas, whose subject was "Priority Regulations," and George A. Davis, president, Oklahoma Gas & Electric Co., Oklahoma City, who reviewed attempts of certain groups in the government to socialize the public utility industry.

In the afternoon the electric and gas sections of the association held separate meetings. Subjects discussed in the electric section included: "Grand River Dam Authority and Rural Electrification Administration," "Plant Protection," and the "Southwestern Power Pool."

C. S. Worley, Consolidated Gas Utilities Corp., Oklahoma City, in the gas section meeting advised exchange of excess materials. A. F. Potter, Gas Service Co., Bartlesville, Okla., explained Order L-31. Gilbert Estill, Oklahoma Natural Gas Co., Tulsa, conducted a round-table on conservation of gas, and L. A. Farmer, Northern Oklahoma Gas Co., Ponca City, Okla., led the exchange of ideas on underground storage of gas.

AGAEM Reorganization Plans to Be Submitted

PLANS have been made for the reorganization of the Association of Gas Appliance and Equipment Manufacturers, "so that it will more properly represent the war-time needs of the members and be able to undertake the work of preparing for post-war requirements," according to Col. W. F. Rockwell, president.

In the new set-up, Leigh Whitelaw, formerly manager of utility sales for Jones & Laughlin Steel Co., Pittsburgh, and prior to that sales manager for American Gas Products division of American Radiator Corp., New York, will become managing director of AGAEM, and Leonard Macomber, formerly with the Power Branch of WPB and the Maritime Commission, will become the Washington representative. Mr. Whitelaw will work from the assocaotion's New York office, while Mr. Macomber will be situated in the new Washington office.

L. Whitelaw

The entire reorganization program has been conducted by Lyle C. Harvey, John A. Fry, and John Van Norden, members of a committee appointed at a meeting of the association held on Feb. 6.

The AGAEM's prime purposes will remain unchanged. They are: 1. To promote the use of gas as a fuel; 2. To promote cooperative relations with the gas utilities, dealers and customers; 3. To promote cooperation among its members for proper use and increased distribution of gas and gas appliances and equipment; 4. To promote and further the interests of the manufacturers of appliances, accessories, apparatus, and supplies used in the production, distribution and utilization of manufactured, natural, mixed or other gases; 5. To collect and disseminate information of value to its members; 6. To establish and administer fair trade practices; 7. To conduct exhibits of products of members of the association in cooperation with the American Gas Association or other organizations; and 8. In order to further the objects of the association, it may be affiliated with the American Gas Association.

The reorganization program, as drawn up by the appointed committee, will be discussed by the board of directors of the AGAEM at Cincinnati on April 28, following which there will be a meeting of members for discussion and approval of final action on the plan.

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Budget Group Appointed

C. B. Wilson, Arkansas Louisiana Gas Co., will head the 1943-44 budget committee of the Southern Gas Association, according to President Frank C. Smith.

Other members of the committee, each of whom has been president of the Southern Gas Association at one time, are: C. H. Zachry, Southern Union Gas Co.; C. L. May, Lone Star Gas Co.; and H. Carl Wolf, Atlanta Gas Light Co.

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Heads Gas Association

At a recent meeting in Memphis, Frank C. Smith, president of Houston Natural Gas Corp., was elected president of the Southern Gas Association. Organized in 1908, the association represents 14 southern states and has a membership of over 500.

Oil Compact Reviews Gas and Oil Resources

A PROGRAM of bringing up-to-date information on what various oil and gas producing states are accomplishing along lines of secondary recovery of oil, underground storage of natural gas and other conservation measures was outlined for the immediate future by the Interstate Oil Compact Commission at its quarterly meeting at the Allis Hotel, Wichita, Kan., April 2-3.

The research and coordinating committee of the compact commission requested its technical secretary, E. G. Dahlgren of Oklahoma City, Okla., to assist the United States Bureau of Mines in compiling a natural gas field review for the 1942 minerals yearbook of the bureau.

Mr. Dahlgren, in a comprehensive paper presented at the Wichita meeting, gave a summary of the national survey of stripper oil wells, bringing statistical data up to include 1942. He presented the results of work of the research and coordinating committee, in cooperation with the National Stripper Well Association.

At the close of 1942 there were 293,281 stripper wells, or 946 less than the total for 1941, Mr. Dahlgren reported. These wells produced 203,203,812 bbl. of oil compared with 207,930,958 bbl. the previous year. In 1942 a total of 56,540,413 bbl. of reserves were lost with the 10,434 abandoned wells. This loss was attributed to abandonment of small wells to obtain the pipe and other equipment for new wells to compensate for the scarcity of equipment, Mr. Dahlgren reported.

The survey, which is to be made by the research and coordinating committee, will include older oil and gas fields where there is a possibility of increasing production by reconditioning wells, and repairing or replacing of worn or obsolete equipment.

The compact commission urged both state and federal authorities to place themselves "squarely behind" every measure that will stimulate new discovery and increase productive capacity of oil and gas.

Principal officers who participated in the meeting included: Governor Andrew F. Schoeppel, Kansas, chairman; J. C. Hunter, Texas, first vice chairman; Clarence T. Smith, Illinois, second vice chairman, and Charles L. Orr, Oklahoma City, secretary.

Calendar

April

AGA Accounting Conference — Cincinnati, Ohio, April 26-27.

AGA Natural Gas Measurement Conference—Cincinnati, Ohio, April 28.

AGA 12th Annual Distribution Conference—Netherlands Plaza Hotel, Cincinnati, Ohio, April 29-30.

May

Indiana Gas Association, Annual Meeting Replaced by "Open" Directors' Meeting—Claypool Hotel, Indianapolis, May 13.

AGA Joint Production and Chemical Committee Conference — Hotel Pennsylvania, New York City, May 24-25.

■ ■

Meeting to Consider Enameled Tank Standard

THE U. S. Department of Commerce is extending an invitation to the producers, distributors and users of porcelain enameled tanks to be present at a general conference to be held at 9:30 a. m., Thursday, April 22, 1943, at the Hotel William Penn, Pittsburgh, Pa. The purpose of the meeting is to consider a proposed commercial standard for porcelain enameled tanks for domestic use, TS-3449, which has been adopted by the enameled tank manufacturers and the cooperating testing laboratories as a basis for consideration by others who may be directly concerned.

If personal attendance is impossible, written comment or suggestions are requested. Such comments, or notification of intended attendance, should be sent to I. J. Fairchild, chief, division of trade standards, Washington, D. C.

This proposed commercial standard covers the so-called "glass-lined" tanks or range boilers, gas water heaters, electric water heaters and domestic water systems, in sizes ranging from 15 to 80 gal. capacity, for 200 to 300 lb. psi. hydrostatic test pressure.

Items included are: base metal; enameling; standard types; standard types, sizes and test pressures; storage capacity rating; working pressure rating; rated hydrostatic test pressure; pulsation pressure; enamel coverage requirements; enamel thickness; solubility of enamel; fittings; production inspection and sampling; visual inspection of enamel; proof test; hydrostatic pressure test; pulsation pressure tests; and methods of test.

■ ■

Omaha Utility to Buy Gas Under "Open" Rate Plan

The Metropolitan Utilities district board of Omaha, Neb., has voted unanimously to cancel its contract with the Northern Natural Gas Co. and to buy gas under the new "open" rate filed by Northern with the Federal Power Commission.

The decision followed the reading of an opinion from General Counsel Dana B. Van Dusen, who said in his opinion the $85,000 a year saving through purchase on the published rate more than offset any special rights the district had under the contract.

General Manager Walter Byrne said the saving would in part offset increased labor and material costs. Omaha's artificial gas is now "enriched" with 42.5% natural gas.

Last year the district paid $412,000 for natural gas, making the saving under the new plan about 20%.

Briefs of Washington Orders

Supplemental Utilities Order U-1-d: Advance approval of limited utility connections for construction of remodeling projects permitted under L-41 is granted in this order filed by J. A. Krug, director, Office of War Utilities, March 8.

To qualify for such automatic approval, material for an electric, gas, or water connection must cost less than $1500 in case of underground connection or $500 in the case of other construction.

In addition, in the case of an industrial or commercial consumer, not more than 60 lbs. of copper may be used in an electrical connection or 250 lbs. of iron and steel for gas or water service.

In the case of domestic consumers, the material cost limitation is the same as industrial or commercial, while the amount of material must be held within the limits established by the Housing Utility Standards issued by WPB.

Previously such connections were granted upon individual application to WPB. The change was made because administration of L-41, formerly centered in Washington and New York, has now been placed on a regional basis.

Controlled Materials Plan: Natural and manufactured gas, electric power, water, and central steam heat suppliers, included within the scope of utilities, are exempted from the terms of CMP Regulation No. 2 and will continue to be governed by the inventory provisions of Utilities Order U-1.

Under this order, no producer may schedule for delivery to himself during a calendar quarter any material to be used for maintenance, repair and operating supplies, or for any other purpose other than authorized additions and expansions the aggregate dollar volume of which exceeds one-third of the aggregate dollar value of withdrawals of material of the same class from inventory during the last nine months of 1942. In the case of producers of gas, water, central steam heat, and public sanitation, not more than 75% of permitted scheduled deliveries of iron and steel pipe may be scheduled for delivery from other than another producer by such utilities.

The order provides also that utilities may not accept delivery of any material to be used as maintenance, repair, or operating supplies, if their inventory of materials of the same class is, or will become because of such acceptance, in excess of a practical working minimum.

Gas Range Production: Gas ranges are on the list of household items recommended to the Office of Civilian Supply of the War Production Board April 5 for wider production by a special four-man committee. Other items on the list of 200 "hard goods" include coal and wood ranges and heaters, non-electric irons, dish pans, roasters, saucepans, wash basins, percolators, double broilers and kettles. All of the cooking utensils, it is recommended, should be made of enamel.

Joseph L. Weiner, Director of the Office of Civilian Supply, said: "The fact that such a study is being made should not be interpreted as meaning that a lot of civilian items are going to be brought back into production, or that production of others is to be suddenly increased.

"Adequate production of essential items for civilians is an integral part of the war effort. We can't fight a total war without such items as axes, hoes, tacks, saucepans, lanterns, lamp bulbs and milking pails."

Domestic Refrigerators: Approximately 400,000 household refrigerators—148,847 of these are gas or electric operated and the other half non-mechanical "ice boxes"—will be available to the general public this spring, the WPB Consumers Durable Goods Division has announced. Most of the refrigerators released will be of 6, 7, or 8 cu. ft. capacity, de luxe models.

Only those who cannot be served by other types of refrigeration are eligible to buy gas or electric refrigerators, and each purchaser must attest, on a government form supplied by his retailer, that "the domestic mechanical refrigerator being transferred is required by me. . . . I have no other domestic mechanical refrigerator, nor do I have available any other refrigeration equipment which I can use. . . ." This form is available to the purchaser, as a part of the sales transaction, from his dealer. It will not be supplied at WPB offices.

The Division pointed out that further release of mechanical refrigerators for general consumption appears impossible at this time, and that no renewal of their production for general consumption is contemplated.

Indications are that the mechanical refrigerators which are to be released will not long remain in the hands of distributors or dealers, since over a period of months dealers have built up a list of customers, who have asked them to "save me a refrigerator when you get one."

Domestic Electric Ranges (L-23-b): Complete cessation of production of new domestic ranges and more specific control of transfers of such ranges from remaining manufacturers' and distributors' stocks are among the new provisions of Order L-23-b as amended March 8 by the Director General for Operations. Manufacture of repair parts is controlled to make them available through normal trade channels without preference ratings.

Transfer of new electric ranges remaining in the stocks of manufacturers and distributors now requires clearance through WPB on Form PD-556.

Requirements for sale from dealers' stocks remains unchanged. Certification of need must be submitted by the consumer, stating that the new domestic electric range is required to replace one that is worn out or damaged beyond repair. Or it may be declared that the range is required because no other cooking equipment is available and that all internal wiring, as well as power lines for the range service, are already installed.

Since May 31, 1942, manufacture of domestic electric ranges has been prohibited under L-23-b except on ratings of A-1-K or higher. There has been no production for general civilian consumption, and only some slight production on appeals granted for military and defense housing requirements. Under the revised order, all such production is prohibited, including that to fill the previously eligible high ratings.

Pricing of Steel Tubing: Ten executives with wide experience in the steel tubing industry were invited by Price Administrator Prentiss M. Brown March 8 to serve on a Steel Tubing Advisory Committee to counsel with OPA on pricing problems of the industry.

Those invited to serve are: J. Ireland, Republic Steel Corp., Cleveland, Ohio; R. Lawson, Summerill Tubing Co., Bridgeport, Pa.; E. A. Livingston, Babcock & Wilcox Tube Co., Beaver Falls, Pa.; W. F. McConnor, National Tube Co., Pittsburgh, Pa.; Wm. A. McHattie, Michigan Seamless Tube Co., South Lyon, Mich.; Charles E. Miller, Michigan Steel Tube Products Co., Detroit; W. B. Moore, Timken Roller Bearing Co., Canton, Ohio; F. J. O'Brien, Globe Steel Tubes Co., Milwaukee, Wis.; H. E. Van Huffel, Van Huffel Tube Corp., Warren, Ohio, and Aaron Waines, Ohio Seamless Tube Co., Shelby, Ohio.

THEY GAVE THEIR ALL

Second Lieutenant **Edward J. Devine,** U. S. Army Air Force. Lost with seven crew mates during a bombing raid over the Solomons. Employee Pacific Gas & Electric Co., San Francisco.

Private **George Merdalo,** engineer battalion. Killed in action in North Africa. Employee Pacific Gas & Electric Co., San Francisco.

Captain **C. Clark James,** 29, U. S. Army. Previously reported missing in action now listed as "killed in action in defense of his country in the Philippine Islands, May 3, 1942." Employee Oklahoma Natural Gas Co.

Private **James Lee Robinson,** 25. Killed in action in the New Guinea area on Jan. 10, 1943. Employee Arkansas Natural Gas Co. and first one killed on active duty.

Pilot Officer **Roy Bing,** RCAF. Killed on active duty on an unannounced date. Employee, gas department, British Columbia Electric Railway Co., Vancouver, B. C.

Captain **Lester C. Addington,** killed in an accident at Fort Bevoir, Va., where he was attending an army engineering school. Employee Kansas City Gas Co. and first one of that company to enter the armed service in World War II.

Pfc. **Troy T. Gustafson,** killed in action in the South Pacific. Employee Southern California Gas Co.

Organizational Planning Staff Established by PAW

The setting up of an organizational planning staff in the Petroleum Administration for War, with Lounsbury S. Fish in charge as director, was announced March 18 by Deputy Administrator Ralph K. Davies.

The staff will advise and assist the administrator and the deputy administrator in developing and maintaining a plan of organization through which the activities of PAW can be most effectively directed, coordinated and controlled.

Mr. Fish comes to the Petroleum Administration from a similar position with the War Production Board.

He is on leave of absence from the Standard Oil Co. of California, with which he has been associated in organizational work for more than 20 years.

■ ■

AGA Advertising Schedule

The American Gas Association committee on national advertising has announced several changes in its April, May and June schedule. Because of the paper shortage situation which has curtailed the size of magazines, no future insertions will appear in *Life* and *Collier's*. Instead, these three leading magazines in the women's field will be substituted: *American Home* for May, *Better Homes and Gardens* for May and June, and *Good Housekeeping* for June. The *Saturday Evening Post* will be used April 24. The schedule will complete the AGA 1942-43 advertising program.

"Thanks, Mom," is the title of the national AGA ad which is currently being released for use in gas company advertising. This ad is both an excellent morale-building ad for the war effort and an effective prestige-building ad for the gas industry. Newspaper mats of this ad are available in three and five column sizes.

PAW Order No. 11 Replaces WPB M-68

PETROLEUM Administrative Order No. 11, replacing the provisions of War Production Board M-68 dealing with petroleum production operations, was issued March 30 by Petroleum Administrator Harold L. Ickes, who said:

"This marks a major step in the simplification of administrative procedure made possible by the executive order establishing the Petroleum Administration for War. The production branch of the petroleum industry will find in the new order more flexibility, simplification and clarification than in the old order, as a result of the experience we have gained during the past year."

The salient changes in the new order:

1. "Maintenance or repair" is redefined to exclude any restriction because of accounting practices and to include capital additions not exceeding $500 in material costs.

2. Pumping equipment may not be installed at flowing wells prior to the time such wells cease to flow naturally, except where the wells are no longer capable of flowing their allowables.

3. "Condensate field" is no longer defined. Instead, 115 fields are specifically listed as condensate fields in which an exception is required before any drilling can be done. This list will be modified from time to time as the need requires.

4. "Exploratory well" has been modified to exclude any well in the proven area of a gas or condensate field, regardless of distance from other wells.

5. The order permits the plugging back or deepening of oil wells whose locations conform to the 40-acre drilling pattern established under the order, even though those wells are not the only wells on the units and are not the prescribed distance from offset wells.

6. Gathering systems may be constructed to connect wells to a pipeline provided the material costs do not exceed $2500, and provided the new installation does not duplicate an existing facility.

7. Except as provided in Supplementary Order No. 1, the drilling of all gas wells requires exceptions.

8. The new order supersedes Supplementary Order No. 5 to the old Order M-68 relating to Illinois; and also Petroleum Administrative Order No. 6, relating to the Hugoton Gas Field, which have been revoked.

9. In sectionalized areas, the drilling unit is redefined so that it must consist of a quarter-quarter section of at least 35 acres.

10. Secondary recovery operations, regardless of geographic location, are no longer automatically excepted. Supplementary Order No. 2 accompanying the PAW Order No. 11 provides automatic approval for secondary recovery operations in the eastern fields. In other areas lack of concurrence within the industry as to the definition of "secondary recovery operations" necessitated deletion of the automatic exemption, and an exception is hereafter required before installing secondary recovery facilities in all areas outside of the eastern fields.

11. PAW Forms 3 and 4 will be used in connection with the new order instead of OPC Forms PD-214-a, b, and c, thereby reducing the number of forms now in use.

The following supplementary orders were issued simultaneously with the new Order No. 11:

(a) Supplementary Order No. 1 prescribes conditions under which gas wells may be drilled in the Appalachian area and in a specified area in Oklahoma, Kansas and Missouri, without securing special authorization.

(b) Supplementary Order No. 2 provides automatic authority to carry out secondary recovery operations in the eastern fields, and also provides specific well spacing requirements for drilling in areas where secondary recovery operations are not carried on.

(c) Supplementary Order No. 3 provides for reworking old wells in the Smackover Field of Ouachita County, Arkansas.

California and the special problems of that area are under active consideration and further announcement in relation thereto wil be made soon.

In the meantime, Supplementary Order M-68-3 relating to "heavy oil" operations in California has been reissued as Supplementary Order No. 4 to PAO No. 11 and will continue in force until superseded by an order incorporating a wider range of production operations.

Deputy Petroleum Administrator Ralph K. Davies stated that the intent of the new order is to outline certain general conditions under which authority to acquire and use materials is automatically granted for use in production operations, thereby reducing paper work to a minimum.

■ ■

Gas Company Man Bails Out Of Shattered Flying Fortress

Sergeant Joseph S. Klasnick, 26, formerly employed by Pittsburgh's Equiable Gas Co., was a crew member of the battered flying fortress "Thumper" which fought its way back home to England during a raid.

According to the Associated Press report, after two shells from a German Focke-Wulf had blown out part of the ship's nose and "anti-aircraft fire had severed the right aileron so the fortress couldn't stay in its 'tail-end' position in the formation, other bullets crippled the hydraulic system and started a fire in the cockpit."

Undaunted, the fortress pilots by main force made their ship out-dive its pursuers. Over England finally, the crew (except the pilots), including Sergeant Klasnick, bailed out. In landing in a grassy field, the plane stopped just six feet short of a stone fence.

WPB Amends Preference Rating Order P-98-c

TO promote the free flow of materials within the petroleum industry, both at home and abroad, the War Production Board March 24 issued an amended Preference Rating Order P-98-c.

The amended order simplifies and concentrates all controls over materials inventories in the petroleum industry, defines "surplus material," provides a method of accounting for transfers of material from domestic operations to foreign operations and establishes participation on and after May 1, 1943, in the Petroleum Administration for War Materials Redistribution Program No. 2 as a prerequisite to securing any materials for use in the petroleum industry. (PAW Materials Redistribution Program No. 2 is now being drafted and will be announced in the near future.)

"Surplus material" is defined as any material not required for use by the owner during the succeeding 90 days. The order prohibits the acquisition by any operator, for use in the United States, its territories or possessions or in the Dominion of Canada, of any materials which would result in his accumulating more than a 90 days' supply.

This limitation, plus the requirements of the PAW materials redistribution program, takes the place of the inventory control requirements previously imposed by Priorities Regulations Nos. 1 and 13, and by Controlled Materials Plan Regulations Nos. 2, 5, and 6. Inventory control requirements in Preference Rating Order P-98-b will be revised in accordance with the provisions of the amended Order P-98-c.

The order establishes the filing of Form PD-470 with PAW as a prerequisite to the acquisition by operators from other operators of materials from within the United States for use outside the United States, its territories or possessions. This will permit the keeping of an accurate record of the materials transferred from the operating stocks of the United States to foreign operations. Thus the books of Lend-Lease and Board of Economic Warfare will reflect all material moving to foreign operations.

Subject to the 90-day supply limitation, sales or transfers of material form one operator to another may be made freely up to May 1, 1943, provided the material is to be used in the United States, its territories or possessions.

On and after May 1, 1943, no operator who is required to obtain a serial number under PAW Materials Redistribution Program No. 2 may obtain material from another operator or apply priorities assistance to obtain material, unless such serial number is in effect. The serial number must be clearly identified upon any document used in completing the transaction.

■ ■

War-Time Sales Program Detailed in P. G. & E. Book

A COMPREHENSIVE study of a war-time sales service program has been prepared by the Pacific Gas & Electric Co., San Francisco, and published in a red, white and blue-covered guide book.

In writing the foreword of the booklet, R. E. Fisher, vice president in charge of public relations and sales, says: "The first duty of every Pacific service employee in 1943 is to keep the kw. hr. of electricity and M c.f. of gas at their post—at work for victory."

The three divisions of the company's war-time sales service program, agriculture, commercial-industrial, and domestic, are fully outlined in a complete section devoted to each phase. The agricultural plan is presented under the following subheads: general, objectives, food for freedom, duties of farm power advisers, pump testing service, and manpower. The commercial-industrial plan is explained under the following subheads: general, objectives, gas and electricity in war, duties of utilization engineer, and manpower. The domestic plan is also divided into sub-sections, including: general, objectives, work which will be undertaken to accomplish war-time objectives, and manpower.

J. H. Gumz is manager of commercial-industrial sales.

■ ■

Booklet on Greenlee War Activities Given Employees

"Greenlee at War" is the title of a booklet issued by the Greenlee Bros. & Co., Rockford, Ill., manufacturer of the Greenlee hydraulic pusher, to its employees for the purpose of giving them a better knowledge of the importance of Greenlee products in the war effort, and through this a better understanding of the importance of their individual tasks.

The part that Greenlee employees, and the tools they manufacture, are playing in the drive to victory is graphically depicted by action shots taken on the company's production line.

The booklet is prefaced by a message from George C. Purdy, president, Greenlee Bros. & Co., and also includes a pictorial presentation of the company's Army-Navy "E" ceremonies of September, 1942.

R. E. Brightup, advertising manager, had charge of the preparation of the booklet.

■ ■

Texas Well Completed

Completed as a gas-distillate well, Republic Natural Gas Co.'s 1 L. A. Straube in Jim Wells county, Texas, is producing 15 bbl. of distillate and 2,560,000 cu. ft. of gas through ¼-in. choke.

War!

DEMANDS

CAREFUL REGULATION OF NECESSARY MATERIAL

H-M Low Pressure Regulator
Sizes from ⅜" to 2"

H-M THERMO CONTROL REGULATOR CO.

Engineers have met this demand in producing this H-M Low Pressure Gas Regulator.

H-M Regulator controls gas economically and efficiently reduces trouble and expense.

All Sizes Are Still Available

H-M REGULATOR COMPANY
THERMO CONTROL CO.
800 EAST 108 STREET • LOS ANGELES, CALIFORNIA

History Repeats . . . The Bronze Age

Tremendous demand for copper and its alloys in making vital war materials bans use of the precious red metal for residential and commercial use.

Haya, mate of Harth the Mighty, was annoyed when she awoke that morning some thousands of years ago. Crouched on his haunches at the mouth of the crude shelter, her spouse was industriously pounding the family utensils and ornaments into weapons. If he bothered to explain at all, Harth grunted that the tribe was at WAR . . .

. . . cooking pot into sword

that because copper was essential to win the fight, household use of the gleaming metal was out for the duration.

And this year of war, 1943, found many a U. S. housewife in a similar dither. She wanted brass fixtures for the bathroom, copper gutters, flashing and bronze screens. But America was at war — victory was dependent on copper alloys for the machines and munitions of war. For home building the vital metal was out — until men again laid down their arms.

Supply. . . and Demand

America produces a great part of the world's copper, also a large percentage of the world's brass, an alloy of copper and zinc. No. 1 fabricator in the field is The American Brass Company, operating 13 U. S. A. and Canadian plants.

As a result of research started over a century ago, and continuing today, the industry has developed a thousand uses for copper and its alloys. American life is safer, more comfortable, convenient and attractive because of copper's many familiar advantages.

In peacetime, the output of copper is ample to supply the ever-increasing demands of industry and civilian needs. But war as it is fought today, requires the entire peacetime output, plus many millions of additional pounds.

Where it Goes

Hundreds of thousands of pounds of Anaconda Copper and Brass are turned out every day by American Brass Company workers for making shell cases alone. Imagine the amount needed for just calibre .50 machine gun cartridges, which may spew from the modern fighter plane at the rate of 3,500 per minute . . . and for the huge steel projectiles fired from heavy artillery and battleship guns, each of which requires a copper or copper alloy rotating band to give the projectile the spin that insures accuracy in flight.

Everdur* at War

Everdur Metal, Anaconda's well-known copper-silicon alloy, is being produced in huge quantities for vital war uses. The very properties of exceptional strength, corrosion-resistance, rust-immunity and toughness which have made Everdur the ideal metal for hot-water tanks make it indispensable for tough war jobs—on both the fighting and production fronts. Only a few such applications are Coast Guard pilot houses . . . fuel and hydraulic lines in aircraft . . . drums for mixing tracer bullet powder.

*Reg. U. S. Pat. Off.

. . . Everdur best here

Wanted: Copper Scrap

As in the production of steel, scrap copper is important in the production of new metal. Mining capacity alone cannot meet the nation's expanded wartime needs. Scrap must make up the deficit. Inducement to those who think it isn't worthwhile to turn in the small quantity of scrap copper and brass they have on hand: relatively, a single pound of copper scrap is as important as 45 pounds of steel in prosecuting the war effort.

43010

Published in the interest of a better informed war effort by

THE AMERICAN BRASS COMPANY ANACONDA

General Offices: Waterbury, Connecticut • *Subsidiary of Anaconda Copper Mining Company*

PEOPLE

Appointment of **Clayton L. Nairne,** general superintendent, gas department, as assistant to the vice president in charge of operations for New Orleans Public Service,

C. T. Nairne

J. H. Collins

Inc., has been announced by **Harold E. Meade,** vice president of the company.

Succeeding Mr. Nairne as general superintendent of the gas department is **Jeffrey H. Collins,** who has been superintendent of the distribution division of the gas department for the past three years. Mr. Collins, who will soon have an anniversary of 20 years' continuous service with the company, has served as chemist and assistant superintendent of gas production, as assistant and superintendent of the meter and appliance division before becoming superintendent of the distribution division.

Mr. Collins is a native of New Orleans, having received his primary education here before graduation from Tulane University. He has served on numerous committees of the American Gas Association and was named chairman of the committee on meters and metering in 1942.

Mr. Nairne becomes assistant to the vice president after 15 years' employment with the company, occupying several different positions in both the electric and gas departments. He has held the position of betterment engineer at the Fort Lauderdale steam electric generating station of the Florida Power & Light Co.

Mr. Nairne was educated in New Orleans at Rugby Academy and received his bachelor of engineering degree from Tulane University in 1924. He has been active in the Association of Commerce, Board of Trade, Louisiana Engineering Society, as well as many other civic and trade associations.

• •

G. H. Gaites, Pittsburgh district manager of the Bristol Co., Waterbury, Conn., manufacturers of automatic control and recording instruments, has announced the appointment of **George R. Atkins** as manager of their branch sales office and factory in Akron, Ohio.

Mr. Atkins attended Northwestern University, where he majored in chemical engineering, and was graduated in 1928. He joined the Bristol Co. sales organization in 1929.

• •

Joseph N. Greene, president, Alabama Natural Gas Corp. and Alabama Gas Co., Birmingham, Ala., has been appointed coordinator of the Jefferson County Civilian Defense Council in Birmingham.

• •

Katherine Rathbone, for many years home service director for the Southern Counties Gas Co. in the Santa Monica Bay district, has been named the company's first home service supervisor, according to Vice President **N. V. McKee.**

With headquarters in Los Angeles, Miss Rathbone will be responsible for coordinating all the home service activities of the company, maintaining close contact with the American Red Cross, OPA and other groups concerned with food and nutrition.

Miss Rathbone, at present chairman of the home service section of the PCGA, has been with the Southern Counties Gas Co. since 1927. Her place in Santa Monica will be taken by **Doris Schubert,** formerly of the Santa Maria district. The position of home service director in the Ventura district left vacant when **Rita Richards** enlisted in the army medical corps, is being filled by **Mary Swiston.**

• •

Louis Ruthenburg, president of Servel, Inc., Evansville, Ind., has been appointed Indiana state chairman of the committee for economic development. The appointment was announced by **Paul G. Hoffman,** president of Studebaker Corp., South Bend, Ind., who is serving as national chairman of the committee. The purpose of the committee is to lay groundwork for post-war employment by private industry. The committee, Mr. Hoffman said, is not a government agency, although it was created at the suggestion of **Jesse H. Jones,** secretary of commerce, and is working with the department of commerce and other government agencies.

• •

The appointment of **Lawrence Vander Leck** as director of production for PAW district 5 was announced recently by Deputy Administrator **Ralph K. Davies.** Mr. Leck succeeds Commander **W. H. Osgood,** who has been called to active duty by the United States Navy. District 5 includes the states of Arizona, California, Nevada, Oregon, and Washington, as well as the territories of Alaska and Hawaii. PAW operations for the area are under the general direction of **Herbert R. Gallagher,** district director in charge.

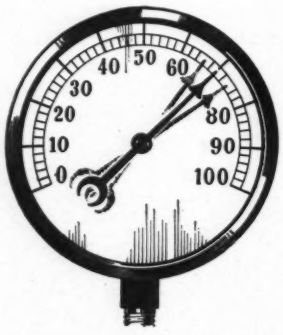
• •

Clarence Wilson has been made superintendent of the Gas Service Co. at Webb City, Mo. He has been with the Doherty organization since 1927 and prior to his new appointment was a member of the operating department at Joplin.

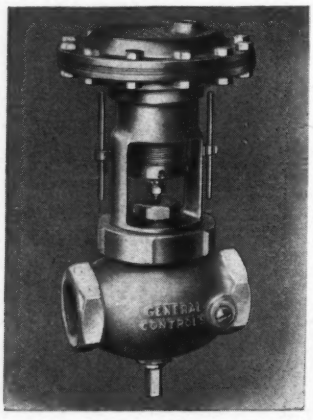
• •

H. Carl Wolf, chairman of the committee on national advertising, American Gas Association, announces the appointment of **Roger A. Gordon,** acting general sales manager, Washington Gas Light Co., Washington, D. C., to the sub-committee on approval of domestic gas copy. This committee executes copy, lay-

Hold It There With a General Controls Gas Fuel Governor



Here is the new General Controls Gas Fuel Governor. It is designed for commercial and light industrial use and will throttle gas lines according to the boiler pressure applied on the diaphragm. It is suitable for natural, manufactured or butane gas. The diaphragm of the governor has a minimum of movement to increase the sensitiveness of control. To provide the high lift necessary to maximum capacity flow, a lever-action to multiply the stem movement is incorporated into the valve. General Controls Fuel Governors have iron bodies with brass trim, and are available from ⅜" to 3" I.P.S. Maximum diaphragm pressure 300 lbs. Write for descriptive literature.. GENERAL CONTROLS, 450 East Ohio St., Chicago, Ill. 267 Fifth Avenue, New York City, N. Y.



HISTORY FOR THE CLASS OF 1953 . . .

Being written today in the *Gulf South!*

• After the bomb bays of giant flying birds of destruction are sealed and the last cannon is fired . . . when the husbands, sons and fathers return to their homes in a peace-restored world, history will record the Gulf South's part in this Global War.

It will show how the Gulf South's rich natural resources were brought into full play . . . how the area's vast military training and proving grounds were used . . . how a mighty industrial machine was quickly geared to war production.

It will be a dramatic, heart-throbbing story, too, of the priceless sacrifices, the untiring efforts and determination of an aroused people.

In unison with all America, the citizenry of the Gulf South pledge *their all* to complete and final Victory.

BUY WAR BONDS . . . FOR VICTORY NOW . . . FOR PEACE IN THE FUTURE

The Gulf South

Working with All America for VICTORY

UNITED GAS PIPE LINE COMPANY

A Natural Gas transmission Company built in peacetime . . . now dedicated to serve wartime fuel requirements throughout the Gulf South.

For Texas, *Mail received at:* Beaumont, Dallas, Fort Worth, Houston, Longview, San Antonio and Wichita Falls. For Louisiana, *Mail received at:* Baton Rouge, Lake Charles, Monroe, New Orleans and Shreveport. For Mississippi, Alabama and Florida, *Mail received at:* Jackson, Miss.

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outs and other details in connection with the conduct of the gas industry's national advertising program, on instructions from Mr. Wolf's committee.

• •

Ben H. Gardner, chairman of the industrial and commercial gas section, American Gas Association, is on leave from the Columbia Engineering Corp., of which he is vice president, and is serving the government in the war effort as deputy director, requirements division, surgeon general's office. Mr. Gardner, who is continuing his leadership of the industrial and commercial gas section, is located in the Maritime Building, Washington, D. C.

• •

The appointment of **Dr. Frederick H. Harbison** of the University of Chicago as labor counsellor to the Petroleum Administration for War was announced on March 22 by PAW Chief **Harold L. Ickes.** Mr. Harbison will advise and represent the PAW on all labor relations and manpower matters affecting the oil industry.

Dr. Harbison is a graduate of Princeton University from which he received his A. B. in 1934 and his Ph. D. in 1940, and has served as manpower consultant in various governmental offices.

• •

Arch Robison has been named manager of the Middletown division of the Cincinnati Gas & Electric Co., succeeding **L. E. Marshall,** who is retiring after 42 years in the utility business, 27 of which were spent with the Cincinnati Gas & Electric Co.

Mr. Robison has had a wide experience in engineering and management and in his new position will supervise the operations of the company's gas and electric service systems in Middletown and adjacent areas.

• •

R. W. Gallagher, chairman of the board of Standard Oil Co. of New Jersey, has been elected president and chief executive officer of the company. He is occupying the post left vacant by the death of **W. S. Farish** on Nov. 26, 1942.

R. W. Gallagher

Mr. Gallagher has been associated with Standard Oil since 1896 and in 1926 was elected president of the East Ohio Gas Co., a Standard subsidiary. It was in 1933 that he became a member of the Standard Oil Co. board with the task of supervising all the company's natural gas interests.

• •

On the occasion of his forty-fifth anniversary of service with the Public Service Electric & Gas Co., Newark, N. J., and its predecessor companies, **John A. Clark,** vice president in charge of operations, was honored guest at a luncheon given by fellow workers on March 1.

Mr. Clark graduated from Union College in 1895, and soon after entered the employ of the East River Gas Co., N. Y., as a gas engineer. He continued with that company and its successor, the New Amsterdam Gas Co., until 1898, when he joined the Newark Gas Co., a predecessor company of Public Service, as superintendent. That company was later merged into the Newark Consolidated Gas Co. and the Essex & Hudson Gas Co., one of the companies absorbed by the Public Service Corp. of New Jersey in 1903. He became general superintendent of distribution in February, 1917, and was made vice president in charge of gas operations in June, 1926, succeeding the late **Henry D. Whitcomb.**

• •

L. B. Denning, Jr., general division operating manager, Lone Star Gas System, has announced that **John C. Card,** formerly located at Sweetwater, has been appointed subdistrict manager at Waurika, Okla. He succeeds **Lowell E. Lloyd,** who has been transferred to Walters, Okla.

• •

Harry F. Foley, secretary of the suggestion committee, Peoples Gas Light & Coke Co., has been appointed executive office assistant in the personnel department after 17 years service in the employee relations department. **Cornelia A. Titus,** senior clerk stenographer, will replace Mr. Foley as secretary of the suggestion committee.

• •

Ronald L. Simms, sales manager of the Tyler Gas Service Co., Tyler, Texas, has been honored as "the outstanding young man in 1942" in Tyler and Smith County, Texas, at a recent meeting of the Tyler Junior Chamber of Commerce, during which he received the "distinguished service key of the United States Junior Chamber of Commerce."

Mr. Simms received the award for his work in bringing to Tyler the U. S. Army East Texas Induction Station, and for his efforts as chairman of the aviation committee in bringing about the construction of the city's new airport.

• •

The first woman has been added to the research staff of the Institute of Gas Technology at Illinois Institute of Technology in Chicago. She is **Frances Estes.** Miss Estes is employed as a laboratory technician and does her work alongside the 26 men who are also on the staff. She thus successfully invades a field that hitherto has been reserved for men since the inception of the Gas Institute in 1941.

The new staff member was graduated from Kalamazoo College in 1940 with a major in chemistry. Before coming to the Gas Institute she was employed in the laboratories of Johnson & Johnson, a surgical supplies house in Chicago.

Miss Estes' work at the Gas Institute involves largely chemical analysis. In addition to her work, she is studying for her master's degree in chemistry.

• •

Effective March 1, **William A. "Bill" McCandless** assumed full charge as Dunsmuir representative of the Coast Counties Gas Co., replacing **E. D. Moody.**

Mr. McCandless joined Coast Counties several years ago after considerable practical experience in plumbing, refrigeration and air-conditioning work, and is now regarded as a capable gas utility man.

This marks the second change within a year in district representatives in the company's northern division. Last Sept. 1 **Fred Arnberg,** formerly of the Santa Cruz district, replaced Yreka Representative **Erle Byer,** who got military leave to become a chief electrician's mate in the navy, and is currently stationed in Great Britain.

• •

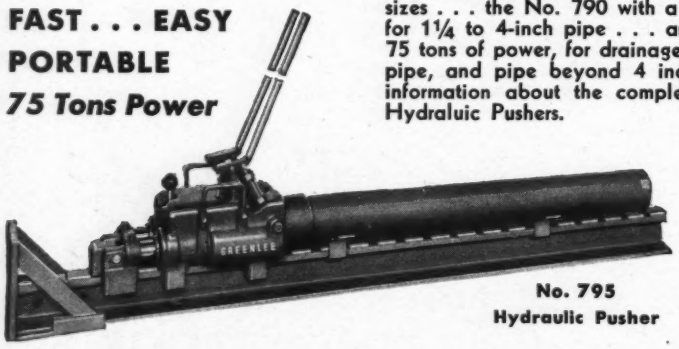
S. R. Inch, president, Ebasco Services, Inc., New York, has been named chairman of the utilities division of the national industrial

DON'T DIG TRENCHES

...PUSH PIPE WITH GREENLEE HYDRAULIC PIPE PUSHERS

You don't waste time and money digging trenches when installing pipe underground with Greenlee Hydraulic Pipe Pushers. There's no pavement cutting, no tunneling, no backfilling, no repaving. Only a short trench is dug to accommodate the pusher and pipe, and one or two men pumping the handles can easily push pipe under sidewalks, streets, highways, embankments, and railroad tracks. No extra equipment of any type needed . . . the powerful hydraulic units do the actual pushing. Built in two sizes . . . the No. 790 with a 20-ton hydraulic unit for 1¼ to 4-inch pipe . . . and the No. 795, with 75 tons of power, for drainage ducts, concrete sewer pipe, and pipe beyond 4 inches. Write for more information about the complete Greenlee Line of Hydraluic Pushers.

FAST . . . EASY
PORTABLE
75 Tons Power



No. 795
Hydraulic Pusher

Send for
NEW PUSHER BULLETIN S-117

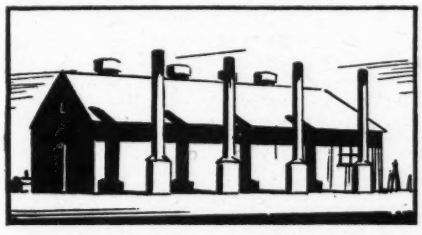
GREENLEE TOOL CO.

1944 COLUMBIA AVENUE • ROCKFORD, ILLINOIS

One or more of these modern Fluor products can be profitably used in your plant

FLUOR AIR-COOLED MUFFLERS

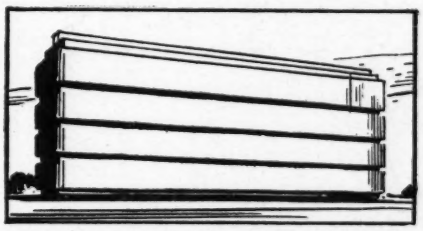
Fluor Air-Cooled Mufflers, for internal combustion engine exhaust lines, use air instead of water for their cooling agent. The installation of Fluor Air-Cooled Mufflers not only eliminates expenditures for water and costly replacements due to corrosion and water-formed scale, but also lowers engine room floor and room temperatures and increases safety to personnel. Nerve-wracking noises are reduced to a minimum by a muffler of improved design. Made in both bottom and overhead exhaust types, Fluor Air-Cooled Mufflers are available in sizes for all internal combustion engines, from the smallest to the largest.



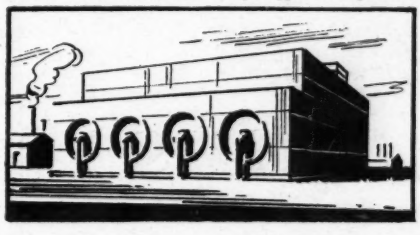
BULLETINS AVAILABLE... Complete descriptive, factual Bulletins describing Fluor Air-Cooled Mufflers, Fluor Atmospheric Aerator Type Cooling Towers, Fluor Mechanical Draft Type Cooling Towers and Fluor Gas Cleaners are available. Everyone concerned with the specifications of plant equipment should have copies of all four Bulletins. Yours will be mailed immediately upon request. Write today.

FLUOR COOLING TOWERS

Fluor manufactures both Atmospheric Aerator Type and Mechanical Draft Type Cooling Towers. Both types have long been considered the standard means for the cooling of process water — in any quantity — in all services. They embody soundest principles of design, highest thermal efficiencies and quality construction for long life. Each type of tower has its own well-defined field of application. Today, for obvious reasons, Fluor recommends the purchase of the Atmospheric Aerator Type. Because an Atmospheric type requires no hard-to-get equipment such as gears, fans, motors, and because it requires fewest man-hours to build, Fluor can deliver this type of tower *quick*, speeding vital war production.

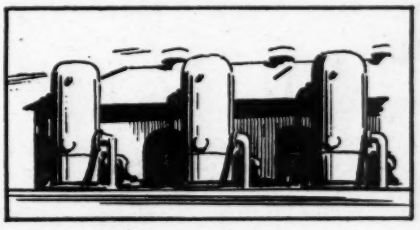


Above: Fluor Atmospheric Aerator Type Cooling Tower; Below: Fluor Mechanical Draft Type Cooling Tower



FLUOR GAS CLEANERS

Fluor has recently announced three entirely new high efficiency models of Gas Cleaners for the removal of entrained liquids and solids from gas and vapor streams — the Vertical Liquid Removal type, the Vertical Solids Removal type, and the Horizontal Liquid Removal type. They are designed and built for a wide range of operating pressures and capacities. The effectiveness of the principle of the new Fluor Gas Cleaners is proved by recent installations as replacements for other types. In these installations liquid carryover, previously measured in gallons per million cubic feet, were reduced to negligible quantities, too small to measure.



FLUOR ENGINEERING AND CONSTRUCTION SERVICE

Fluor offers to the oil, gas and allied industries a complete designing, engineering and construction service, *from plan to plant*. Fluor builds synthetic rubber, toluene, aviation gasoline, alkylation, isomerization, recycling, natural gasoline and gas transmission plants and petroleum refineries for operation in the United States or abroad.

DESIGNERS • ENGINEERS • CONSTRUCTORS

FLUOR

SINCE 1903

THE FLUOR CORPORATION LTD. 2500 South Atlantic Boulevard, Los Angeles, California
NEW YORK CITY, N. Y. • PITTSBURGH, PENNSYLVANIA • KANSAS CITY, MISSOURI • HOUSTON, TEXAS

information committee of the National Association of Manufacturers.

• •

When the new officers of the American Society of Tool Engineers were elected, **Douglas D. Burnside,** superintendent, American Stove Co., St. Louis, was among them, being named first vice president of the society.

• •

Three new directors of the board of the Gas Service Co., Kansas City, were elected at a meeting held in that city on March 18.

They were: **W. R. Phipps,** manager of the Gas Service Co., Wichita; **Louis L. Roesle,** manager of the Gas Service Co., St. Joseph; and **Judge H. A. Russell.**

• •

Allen P. Colby has been appointed advertising manager of all divisions of the National Supply Co., manufacturer of oil field machinery and equipment, oil field and industrial pipe and conduit, and gas, oil and diesel engines. Mr. Colby will be stationed at the company's general sales offices in Toledo, Ohio.

R. M. Sylvis, formerly advertising manager of Spang-Chalfant division of National Supply, has been appointed assistant advertising manager, with headquarters at the company's executive offices in Pittsburgh, Pa.

• •

Succeeding **D. L. Brown,** who died last November, **Harold Beatty,** former engineer for the Keppers interests, has been named superintendent of Eastern Gas and Fuel Associates.

• •

Executive Vice President **H. L. Masser,** Southern California Gas Co., has announced the names of the executives in charge of the company's butadiene operation.

J. G. Rollow will continue as supervising engineer, with **W. W. Gaulka** as his chief assistant. **Guy Corfield,** as research engineer, will be responsible for handling technical and chemical control problems and research work.

J. G. Rollow

Guy Corfield

Grove Lawrence, as manager of manufacture, compression and storage, will be responsible for operation and maintenance of the gas manufacturing and compressor plants, their equipment and personnel. **M. J. Cereghino,** superintendent of butadiene-gas production, will be in charge of gas generators, while **K. G. Steinbeck,** superintendent of the absorption plant, will be in charge of the Jackson St. compressor plant, absorption plant and dehydration plant. **C. W. Beck,** superintendent of compressor and storage, plants and repair crews. **W. M. Pipkin** will will have charge of compressor plants, boiler supervise safety, fire prevention and first aid at the new butadiene plant.

Election of three new directors was announced in Omaha, Neb., recently by the Northern Natural Gas Co. The new directors are: **Max A. Miller,** executive vice president of the Miller Cereal Mills of Omaha; **J. H. Dunn,** vice president and general manager of the Shamrock Oil & Gas Co. of Amarillo, Texas; and **C. E. Brook,** vice president of the Kansas Power & Light Co., Salina, Kan.

The election was part of the transition from holding company ownership to general ownership ordered by the securities exchange commission under the provisions of the 1935 holding company act.

Northern Natural Gas has 3000 miles of pipeline and brings gas from as far south as Texas to as far north as Minneapolis.

• •

Kathryn L. Barnes has been appointed director of the home service division of the Equitable Gas Co., Pittsburgh, Pa., effective March 1, according to an announcement by **D. P. Hartson,** vice president and general manager of the company.

Kathryn L. Barnes

Miss Barnes is a native of Buffalo, N. Y., and majored in home economics at the Buffalo State Teachers College. She obtained a groundwork of extensive practical experience with the Iroquois Gas Co. of Buffalo, serving under the direction of **Mrs. Louella M. Fisher,** nationally recognized as a home service authority.

Miss Barnes later became home service director with the Pennsylvania Gas Co. in Erie, and from this latter position has come to Pittsburgh. In her new duties she will plan and direct the work of the home service division, involving demonstrations, lectures, and advisory assistance to customers, employees and dealers, and under war-time conditions she will devote her chief attention to current home problems centering around the conservation of food, adequate nutrition under food and rationing conditions, and the efficient use of natural gas in home appliances.

• •

Clarence H. Waring, general superintendent, Kansas City Gas Co. and the Wyandotte Gas Co., has been appointed general manager of the Wyandotte Co., succeeding the late **William H. McKenzie,** who died Feb. 12.

R. K. Murdock will replace Mr. Waring as general superintendent of the Kansas City Gas Co. and he in turn will be replaced as general foreman of the Kansas City Gas street department by **Charles D. Taft** of the engineering department.

Mr. Waring has been associated with the Kansas City, Kan., organization almost continuously since 1905. He is a director of the Wyandotte Co. and the Gas Service Co. After serving in numerous capacities in the companies, he was made assistant general superintendent of both Kansas City Gas Co. and the Wyandotte Co. in 1920. In 1924 he was promoted to general superintendent.

For many years Mr. Waring has been an active member of various American Gas Association committees and is a past president of the distribution committee. He is a member of the managing committee of the AGA Laboratories and chairman of the AGA sectional committee, project Z 21, AGA provisional requirements committee. He has also been serving as chairman of the gas ordnances committee of the Missouri Association of Public Utilities.

Benjamin C. Adams is president of the Wyandotte Co.

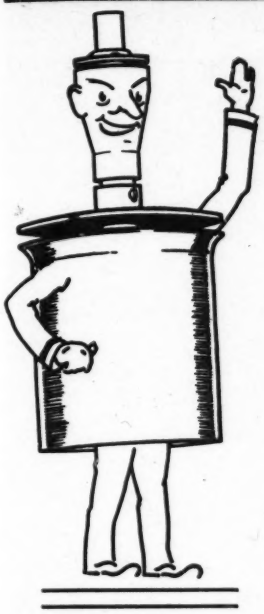
WILLIAMS BROTHERS CORP.

PIPE LINE CONTRACTORS

OIL - GAS - GASOLINE - WATER

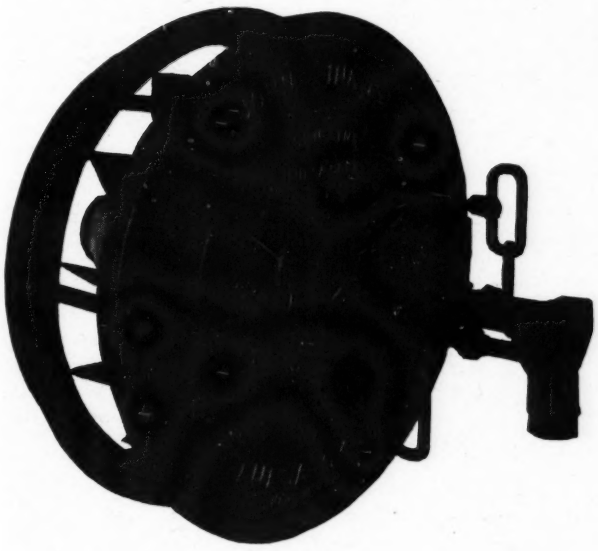
Also Heavy Construction

NEW YORK • TULSA • ATLANTA • HOUSTON



BURNERS FOR WAR POWER BOILERS

John Zink Series Y Register Type Combination Burner



John Zink Series Y Burners are available in sizes from 14″ to 30″. No special tile necessary. Any gas at pressures from 5 lbs. to 25 lbs. may be used.

Fuel scarcity need be no problem if you use Series Y Burners, they burn either, or both, gas and oil with the same heat pattern. They are particularly designed for boilers, oil and gas processing heaters and any other power or processing furnaces. Either fuel gun may be removed without disturbing the operation of the other. The feather-weight fuel guns may be easily removed by one man. Both oil and gas may be burned at the same time.

The burner is easy to operate—simple in construction—will give uninterrupted burner service.

Write for Descriptive Literature and Specifications

JOHN ZINK COMPANY

Tulsa, Oklahoma

NEW YORK • LOS ANGELES • DETROIT • SAN FRANCISCO

GAS INDUSTRY
of the West
LOOKS AHEAD

Committee Appointed to Aid Post-War Appliance Planning

On drafting board, in laboratory and experimental shop, tomorrow's gas appliances are taking form today. ★ Post-war models will reveal even more attractive designs, new materials, improved efficiency, finer features.

MOBILIZING IDEAS

The P.C.G.A. recognizes its obligation to further this far-sighted program. Its President and the Chairman of its Manufacturers' Section have appointed a representative *Post-war Appliance Committee.*

CONTESTS ORGANIZED

This Committee's projects will include *contests* among Gas Company employes, to bring out constructive ideas for improvement of appliances—recommendations based on actual customer-contact, and sales and service experience.

Now, as for 50 years, the Gas Industry of the West, through its Association, looks and plans ahead. ★ But—Victory first—keep on buying War Bonds!

THE PACIFIC COAST
GAS ASSOCIATION

SERVING THE WEST—IN WAR AND PEACE

GAS FUEL

Obituaries

Robert A. Carter, Jr.

Robert A. Carter, Jr., manager of gas production, Consolidated Edison Co. of New York, Inc., who was on a sick leave from the company, died of a stroke April 2 near Tucson, Ariz., while en route to New York. Mr. Carter, who represented the third generation of his family in the service of the Consolidated Edison system, would have completed 41 years of service with the system this fall. His grandfather, Samuel Carter, was treasurer of the New York Gas Light Co. and first treasurer of the former Consolidated Gas Co. His father, the late Robert A. Carter, Sr., was vice president of the Consolidated Gas Co.

Mr. Carter started with the Consolidated Gas Co. in 1902, working for two years as a stove repairman in the customer service shop. By 1908 he had become assistant engineer of the Central Union Gas Co.'s 138th Street station. In 1922 he was made engineer of manufacture for the Consolidated Co. and the Astoria Light, Heat & Power Co. He was appointed a vice president of the Astoria company in 1928 and, following the merger of the Consolidated Gas Co. and Astoria Light, Heat & Power Co. into Consolidated Edison Co. of New York, Inc., in 1936, he was made engineer and later manager of gas production, Consolidated Edison.

He was a member of the American Institute of Electrical Engineers, American Gas Association, American Society of Mechanical Engineers, Illuminating Engineering Society, Society of Gas Engineering, and the Society of Gas Lighting. He is the author of a number of papers on technical and engineering subjects.

• •

Joseph Robert Jarvis

Joseph Robert Jarvis, gasoline plants superintendent, Lone Star Gas Co. and Lone Star Producing Co., Dallas, Texas, died following a brief illness on March 27.

Born at Brandon, Texas, Mr. Jarvis was one of the first to graduate from the Agricultural and Mechanical College of Texas with a degree in chemical engineering. He joined the Lone Star organization in 1918 and prior to that had been employed by both Galveston Gas Co. and the Texas Power & Light Co. When he first started to work for the Lone Star Gasoline Co. he was a laboratory assistant at the Petrolia plant and a year later was placed in charge of that plant. In January, 1924, he was made supervisor of all gasoline plants and seven years later was officially named general superintendent of Lone Star Gasoline Co.

At the time of his death Mr. Jarvis was vice president of the Natural Gasoline Association of America, which organization he helped to found.

• •

Margaret Price

Margaret Price, home service employee of the San Diego Gas & Electric Co., San Diego, Calif., passed away suddenly on Feb. 28 after a major operation.

She was employed by the company in Dec., 1940, as a demonstrator and in March, 1941, went to the Oceanside office. It was in June, 1942, that Miss Price was transferred to the San Diego office. She was a member of the American Women's University Association.

• •

W. A. Beahr

William A. Beahr, former president, North Shore Gas Co., Chicago, died Feb. 18 at his home in Glencoe, Ill. He was 67 years old.

Mr. Beahr was well known in utility groups, having been a member of the American Gas Association since 1918.

• •

Merrill N. Davis

Merrill N. Davis, executive vice president and secretary, Dresser Manufacturing Co., Bradford, Pa., passed away suddenly on March 7. He was a New Englander by birth, having been born at Millbridge, Maine, Jan 10, 1886.

Merrill N. Davis

When 15 years of age he went to Boston, secured employment with Henry K. Barnes (now Henry K. Barnes Co.), and after two years went with the Empire Rubber Manufacturing Co. of Boston as a clerk. Two and a half years later he became connected with the B. F. Goodrich Rubber Co.

He resigned in 1916 to help organize the Rexhide Rubber Manufacturing Co., later becoming vice president and sales manager. After two years with this company he returned to the Goodrich Rubber Co.

In August, 1919, Mr. Davis became associated with the Dresser Manufacturing Co. in charge of sales and advertising. In December, 1928, he was elected a director of the company and on Jan. 3, 1929, he was made vice president. In May, 1932, he was given the additional title of secretary.

Mr. Davis had been actively identified with the Association of Gas Appliance and Equipment Manufacturers since it was organized in 1935. He served as vice president of that organization in 1935-36 and the following year was elected president.

• •

Bert Gray

Bert Gray, 60, president of the Peoples Gas Co., Port Arthur, Houston Electric Co., Galveston Electric Co., and the Texas Bus Lines, died following a lengthy illness on Jan. 6 in Houston, Texas.

Mr. Gray was born in southern Ohio and at an early age accompanied his parents to Fort Bend County, Texas. Later when he moved to Houston he worked in the claims department of the Houston Electric Co., one of the concerns of which he later became president.

• •

James W. McMahon

James W. McMahon, president, Northwestern Ohio Natural Gas Co. from 1905 until his retirement in 1928, died Feb. 7 in Toledo, Ohio, at the age of 87.

Mr. McMahon was long interested in the natural gas industry and was a member of the Natural Gas Association of America for a number of years from 1909.

• •

F. W. Balderson

Fred W. Balderson, 32, office manager of Minneapolis-Honeywell Regulator Co.'s Philadelphia branch, died on Feb. 20 following an illness of three months. He had been with the company for 12 years.

FPC Approves Abandonment Of Gas Sale to W. S. Fees

THE Federal Power Commission has granted the application of Consolidated Gas Utilities Corp. of Oklahoma City, Okla., for permission to discontinue sale of natural gas to W. S. Fees, Iola, Kan., who in turn sold the gas to Cities Service Gas Co., Bartlesville, Okla. At the same time the commission issued a temporary certificate authorizing Consolidated to construct and operate facilities for the delivery of not more than 10,000,000 cu. ft. of natural gas per day to the Gas Service Co., Wichita, Kan. Two million cu. ft. of this gas will be used in meeting the requirements of the WPB directives and in supplying Consolidated's customers in the vicinity of the northern terminus of its pipeline.

The gas referred to in the Consolidated-Fee case is in the Alden Field, Rice County, Kansas, and was discovered by Consolidated Gas Utilities Corp. The applicant stated that it needs the gas to supply its own markets.

At a hearing in Kansas City, Mo., before the FPC Dec. 10, 1942, it developed that the first delivery by Consolidated to Mr. Fees was made on June 1, 1941, and that by Oct. 22, 1942, he had delivered 2,898,036 cu. ft. of gas to Cities Service. Consolidated, on Oct. 9, 1942, filed its application with the commission for permission to discontinue the sale.

The Cities Service Gas Co., Nov. 14, 1942, protested termination of the contract, claiming that it would now be unable to replace the supply which it has been receiving from Mr. Fees.

■ ■

Illinois Company Perfects Gas Food Dehydration

As a result of experiments just completed by the Public Service Co. of Northern Illinois, dehydration, one of the oldest known methods of food preservation, may return to favor with thousands of war-time housewives this year.

Working at the company's gas headquarters, engineers and home service economists have successfully dehydrated a dozen varieties of fruits and vegetables in the oven of an ordinary gas range, of which there are more than a million now in service in Chicago and northern Illinois. It is the plan of the Public Service Co. that much of the food grown this year in victory gardens can thus be preserved.

The company is planning to issue booklets and other material detailing the dehydration process and to hold educational demonstrations for housewives in preparation for the canning season.

■ ■

Absorption Plant to Be Erected at Santa Maria

A casinghead gasoline absorption plant, capable of processing 18,000,000 cu. ft. of gas per day, is to be built by the Union Oil Co. at the Santa Maria oil field. It is estimated that the plant when completed will have cost approximately $500,000.

This new plant will take care of the increasing supply of natural gas in the field, and will at the same time create a supplementary supply of dry gas for distribution as fuel.

■ ■

Companies Want Gas

Cores taken at Stanolind and Amerada's wildcat well, 1 Cushing Royalty, in southern Oklahoma, added to a gas flow estimated at from 25,000,000 to 40,000,000 cu. ft. Gas companies are said to be bringing pressure to bear to force utilization of the gas for vital war industries, so the operators may decide to skid the rig for another hole through the gas zone to test lower horizons.

I.C. LITTLE

PIPE LINE CONTRACTOR

23 YEARS EXPERIENCE

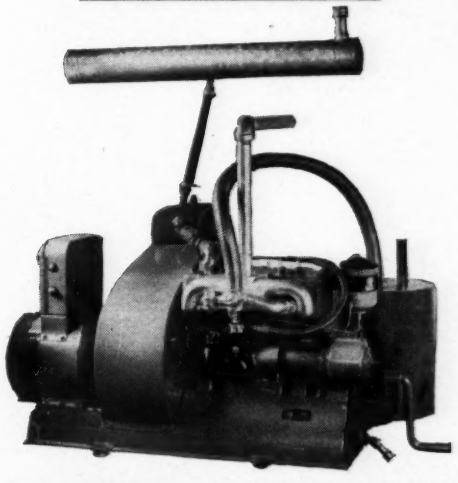
MAIN OFFICES: 1102 GULF STATES BLDG.

DALLAS, TEXAS

CENTRAL WAREHOUSE, VALLEY PARK, MISSOURI

CATHODIC PIPE LINE PROTECTION

VITAL TO VICTORY



4-CYLINDER NEW IMPROVED 1943 MODEL JACOBS CATHODIC UNIT

IMMEDIATE DELIVERY AT PRESENT

Operates on Natural Gas, Butane or Gasoline

Meets any requirements from 1000 to 5000 watts, with ampere maximum 150, volts 10 to 40. Slow operating speed, 600 to 800 r. p. m. insures longer service. Other specifications—Fram oil filter, extra large 5-gal. oil crankcase reservoir, super-size special design oil type air cleaner, heavy duty Scintilla Magneto, extra heavy duty spark plugs, automatic radiator condenser (many months without added water) and automatic fuel shut-off insure peak operation and safety with minimum maintenance.

Immediate delivery now. Anticipate your requirements; we cannot assure future delivery schedules and prices. **Write for Complete Literature and Prices.**

THE JACOBS WIND ELECTRIC COMPANY, INC.

PIPE LINE DIVISION • MINNEAPOLIS, MINNESOTA

America's Leading Manufacturer of Pipe Line Cathodic Plants

Announcing
THE HOME VOLUNTEER
Wartime Food and Nutrition Program
COURSE LETTER & MEETING OUTLINE
PROGRAM UNIT I
"Eating for Fitness"
PROGRAM UNIT II
PROGRAM UNIT III
"Getting the Most Out of the Foods You Buy"
PROGRAM UNIT No. I
PROGRAM UNIT No. II
FRUITS FOR SALAD and FRUIT COCKTAIL
GRAPEFRUIT
GRAPEFRUIT JUICE
GRAPE JUICE
PEACHES
PEARS
PINEAPPLE
PINEAPPLE JUICE
BEETS
CARROTS
CORN
PEAS
SAUERKRAUT

revised wartime program on food and nutrition under rationing

Servel's Home Volunteer Course now expanded to help your customers meet today's problems of nutrition . . . point-budgeting . . . purchasing . . . meal planning.

FOOD RATIONING has heaped new problems on the American homemaker. How should she buy to get the most for her points? What can she do about shortages? How should she plan her meals so that they'll be balanced and nutritious? These and scores of similar questions are in the minds of housewives all over the country today.

By helping to answer these questions for your customers, you can help America keep fit and healthy—and, at the same time, win good will for your company.

Servel's Home Volunteer Wartime Food and Nutrition Course has been expanded to help you supply the answers to these new problems. The course consists of three practical program-units, written in simple, easy-to-understand language.

1 **"Eating for Fitness." Explains the fundamentals of good nutrition and how to apply them to the Government's Food Rules.**

2 **"Planning Your Own Nutritious Meals." Shows homemakers how to shop and plan in rationing times.**

3 **"Getting the Most out of the Foods You Buy." A guide to proper handling, storage, and preparation of food.**

These timely programs can be easily adapted to meet any local requirements or situations. Various ways they can be used include neighborhood meetings, community clubs, home study courses, in newspapers and over the radio.

SEND FOR NEW FREE KIT. If you haven't received the new portfolio that contains samples and descriptions of materials for conducting the Home Volunteer Wartime Food and Nutrition Program, write today to Servel, Inc., Evansville, Ind.

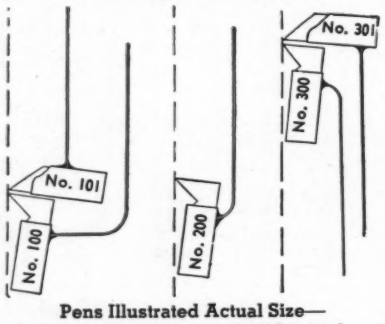
SERVEL, *Inc.*

PEACETIME MAKERS OF THE GAS REFRIGERATOR

You Need the

BIG INK CAPACITY of BETA PENS for your

48 hr., 72 hr. and 7 day Charts



Pens Illustrated Actual Size—
Can Be Used Separately if Desired

Hand-Honed, Factory-Adjusted Nibs Make CONTINUOUS THIN LINE . . . Eliminate Splattered, Blotted and Incomplete Chart Records

Your pen troubles are over when you install BETA PENS in your recording instruments. They have greater INK CAPACITY, and capillarity is so perfect that they use the ink to the last drop.

Nibs are made of spring-hard Allegheny metal, hand-honed and adjusted under a powerful glass. Every pen is factory-tested to insure its perfect performance. Ink cups are cut from solid brass bar stock—no seams to leak—and the entire pen is heavily plated to resist corrosion. Mounting shanks are spring phosphor bronze.

BETA PENS fit practically all types of recording instruments, and are especially suitable for pulsating flows and volumetric arms. Save man-power—and get clean, easy-to-read and complete chart records by ordering a supply of BETA PENS **today.**

PRICE **$1.00** EACH

Money Back if You Are Not Completely Satisfied
Lower Prices in Quantities . . . Special Designs. Prices on Request.

Send for New Bulletin

AMERICAN RECORDING CHART CO.
3113 E. 11th St., Los Angeles, Calif.

Middle West Corp. Plans Reorganization

MIDDLE West Corp., large public utility holding company subject to "death sentence" rulings under SEC supervision, is laying plans for integrating its own operations without the final SEC order, according to Purcell L. Smith, president.

Under this arrangement, Middle West's 1943 program has been summarized as follows:

1. North West Utilities Co. will file applications for disposition of all its assets through distribution to its stockholders, and the corporation will finally be dissolved.

2. Middle West will take the necessary steps toward the disposition of all the Kansas Electric Power Co. common stock and the 54% common stock of Missouri Gas & Electric Service Co. which it holds. It will also dispose of holdings in Pecos Valley Power & Light Co. bonds and stock, Michigan Gas & Electric Co. stock, Middle West Utilities of Canada stock and miscellaneous smaller stock holdings.

3. Amended applications will be filed with SEC for permission for Public Service Co. of Oklahoma to acquire assets of Southwestern Light & Power Co. This will mean the liquidation of Southwestern Light & Power Co. and its 6% preferred stock will be paid off if an SEC sanction is obtained and the required arrangements completed.

4. West Texas Utilities Co. is at present acquiring all outstanding securities of Pecos Valley Power & Light Co. If this is accomplished, the Pecos Valley company will transfer all its assets to West Texas Utilities.

If integration proceedings now pending with the SEC are passed in accordance with the suggested company plan, the Middle West Corp. will finally consist of Central Illinois Public Service Co., Kentucky Utilities Co., and whatever portion of the stock of Public Service Co. of Indiana is allotted to the parent corporation. All this would mean that Middle West Corp. would be about 40% of its present size.

■ ■

Servel Sponsors Saturday Radio Food Program

AN informative radio program on food and rationing will be presented to the radio audience on a Columbia Broadcasting System coast-to-coast hookup by Servel, Inc., peace-time manufacturers of gas refrigerators. Gas companies will participate via a "cut in" permitting the local home service director to bring to the listeners the latest news on fresh vegetables and other available foods in her territory.

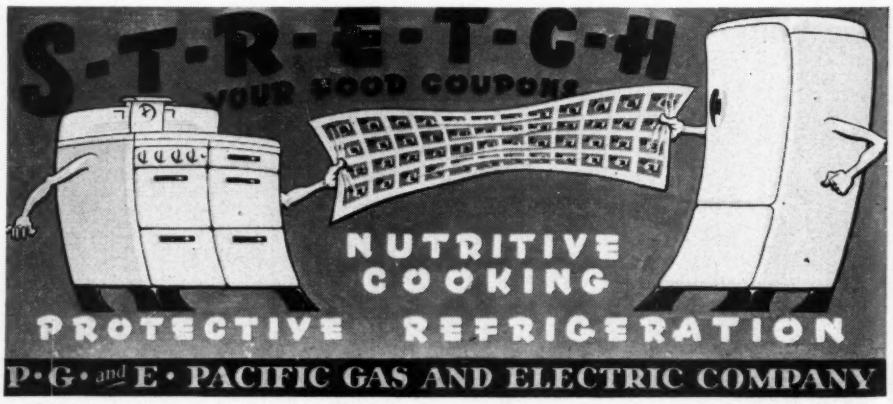
Each week there will be an official digest of the week's food news from Washington. This material will be broadcast by a government representative. Another feature will be a prominent speaker who will have an important message every Saturday morning for the listeners.

The Servel-Gas Companies, half-hour program entitled "Fashions in Rations" will be on the air on Saturday mornings beginning April 3, at 11:30 o'clock eastern war time; 10:30 central war time; 9:30 mountain time, and 8:30 Pacific war time.

Billie Burke, the beloved American actress, will furnish the entertainment. Miss Burke will play the part of a rationed, perplexed housewife, and in one break in the program will interview an outstanding woman selected from American housewives who have made some unique contribution to homemaking in connection with the war effort. This homemaker will be given a war bond for her appearance.

Alice White, Servel's food advisor, will make her debut on this program. She will be interviewed by Miss Burke and answer questions of current interest in food, rationing, food preparation and preservation.

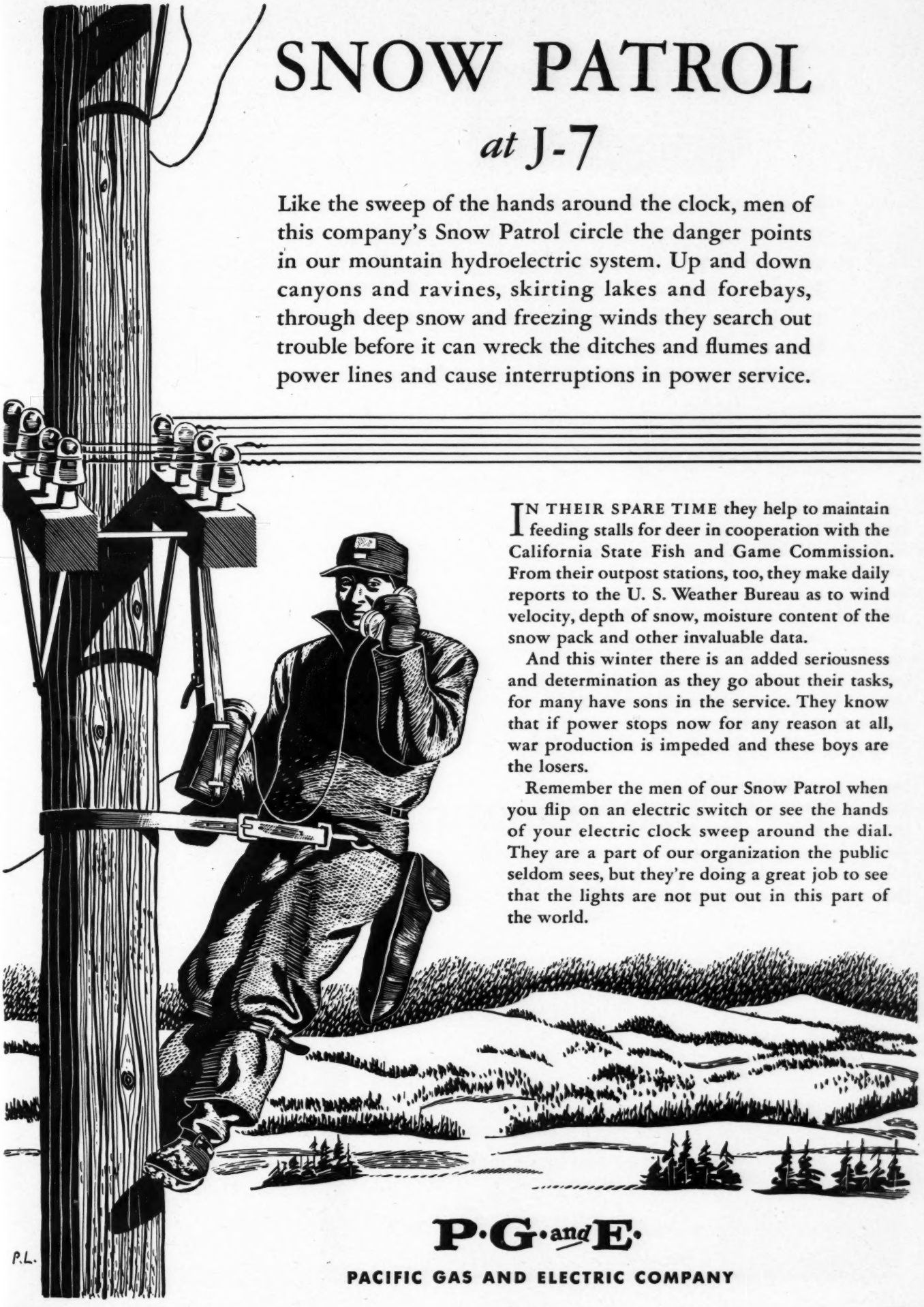
The local home service directors who participate in the program will be in a position to invite listeners to visit the home service departments of the local gas companies where assistance can be obtained in solving problems of meal preparation and homemaking. The radio show is part of Servel's home volunteer program now in operation in more than 450 gas companies cooperating with county nutrition committees. The home volunteer program serves 11,000,000 homemakers.



Cleverly timed to appear simultaneously with the new food rationing books, this original billboard was displayed by the Pacific Gas & Electric Co. in more than 300 strategic locations throughout northern and central California during the month of March.

SNOW PATROL
at J-7

Like the sweep of the hands around the clock, men of this company's Snow Patrol circle the danger points in our mountain hydroelectric system. Up and down canyons and ravines, skirting lakes and forebays, through deep snow and freezing winds they search out trouble before it can wreck the ditches and flumes and power lines and cause interruptions in power service.



IN THEIR SPARE TIME they help to maintain feeding stalls for deer in cooperation with the California State Fish and Game Commission. From their outpost stations, too, they make daily reports to the U. S. Weather Bureau as to wind velocity, depth of snow, moisture content of the snow pack and other invaluable data.

And this winter there is an added seriousness and determination as they go about their tasks, for many have sons in the service. They know that if power stops now for any reason at all, war production is impeded and these boys are the losers.

Remember the men of our Snow Patrol when you flip on an electric switch or see the hands of your electric clock sweep around the dial. They are a part of our organization the public seldom sees, but they're doing a great job to see that the lights are not put out in this part of the world.

P·G·and E·

PACIFIC GAS AND ELECTRIC COMPANY

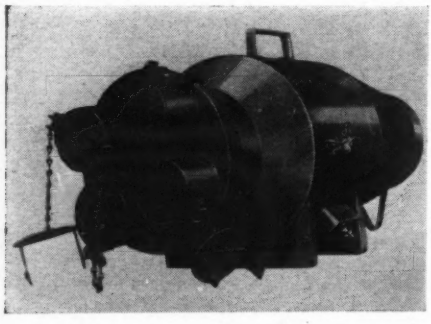
PRODUCTS

Exhauster and Blower

Chelsea Fan & Blower Co., Inc., 1206 Grove St., Irvington, N. J.

Model: The "Octopus Jr." Exhauster and Blower.

Application: This is a small portable unit to eliminate gases, fumes, etc., from closed-in



places such as shipholds, welding rooms, tunnels, vaults and basements.

Description: This unit is powered by a ¾-hp. ball bearing motor and blows or sucks 2000 cfm. It has newly developed heavy steel wheels and operates in any position. Weight of the unit is 70 lb.

This equipment has adapters for three 4-in. nozzles or four 3-in. nozzles for flexible hose, and is complete with caps to close nozzles when not in use. Each 4-in. metal hose of 20-ft. lengths will exhaust 250 cfm., and each 3-in. hose over 200 cfm. Entire unit can be hung into a small manhole.

The company will ship one of these units on approval to anyone doing war work.

■ ■

Floodlighting Projectors

Benjamin Electric Mfg. Co., Des Plaines, Ill.

Model: New Benjamin Floodlighting Projectors.

Application: To meet war-time needs for protective floodlighting and lighting of yards, areaways and other outdoor work places.

Description: Replacing the Benjamin Type RD projectors, these new seamless steel housing units embody all the features of the previous models, except that all parts formerly made of aluminum, brass or other non-ferrous metals are now furnished in steel or cast iron specially treated by porcelain enameling, and other rust-proofing to render them resistant to corrosive atmospheric influences and weathering.

They have a silvered mirror crystal glass reflector. The beam spread is adjustable over the entire beam range from narrow to wide, which makes it possible to fit the beam to requirements of the installation. Units are furnished with vertical and horizontal stops, which automatically reposition projector and eliminate need for resetting after projector has been tilted or turned around for cleaning or inspection.

The new RDS units are furnished in two models, the RDS 14 for 300-w. and 500-w. general service lamps, or 500-w. floodlighting lamps. The RDS 18 for 750-w. and 1000-w. general service lamps or 1000-w. floodlighting lamps. Each model is supplied with plain, stippled or ribbed, heat-resisting glass covers.

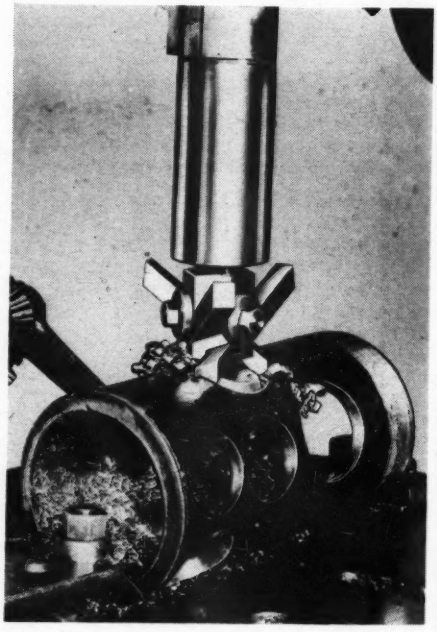
■ ■

Adjustable Hole Cutter

Robert H. Clark Co., 3424 Sunset Blvd., Los Angeles.

Model: Clark 3-Blade Adjustable Hole Cutter.

Application: For use in electric drills, pneumatic motors, drill presses, lathes and milling machines.



Description: This is a precision adjustable hole cutter for any strength steel. It has an expansion range from ¾-in. holes to 4½-in. holes in metals, plastics, hard fibers, pressboard, or wood in thin sheets or ¾-in. thick plates.

The machine has heat-treated shanks and high-speed tool bits, precision ground. The hardened and ground pilot is removable and lead drill instead of pilot can be used. The finished holes are smooth.

■ ■

Respirator

Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh, Pa.

WELL EXPERIENCED – WELL EQUIPPED

General PIPE LINE Contractors

BLACK CONSTRUCTION CO.

409 Magnolia Building — Dallas, Texas

Phone Riverside-6400

E. A. BLACK — J. I. BISHOP — L. H. LOCK

NEED A DRILLING MACHINE ?

For those "hurry-up" jobs this "E-4" machine is just what you need. It is easy to handle, fast, and drills through stops, valves, and fittings which have been welded or clamped onto the main. Any size hole from 7/16" to 1". Either dry pipe or pressure mains . . . Interested? Write Dept. G-4

MUELLER CO.

Decatur, Ill. - - - - Los Angeles, Calif.

Model: Clear-Vue Model Dustfoe Respirator.

Description: This is an all-plastic model which has been approved by the U. S. Bureau of Mines. It is claimed to be durable, odorless, non-corrosive, and a non-conductor of electricity and heat. Its transparent construction makes possible the inspection of the filter for proper insertion and seal without removal from the respirator. A plastic catch on the filter case locks in place only when the filters are in the correct position. The unit is comfortable to wear and gives approved protection against all pneumoconiosis-producing nuisance or toxic dusts. The self-adjusting facepiece has a new form molded sponge rubber face cushion. An army type exhalation valve provides immediate drainage of any condensation from the face piece.

With the exception of single filters which permit a fresh new filter with each cleaning, all parts of the Clear-Vue are interchangeable, and can be washed and sterilized. Headband hardware of the unit is also of plastic.

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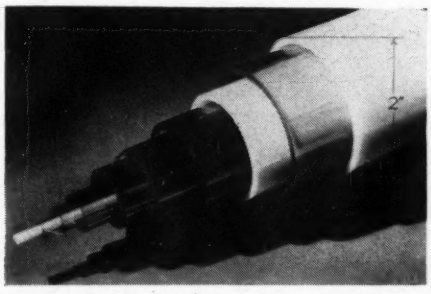
Seamless Plastic Tubing

Extruded Plastics, Inc., Norwalk, Conn.

Model: "Tulox" TT seamless plastic tubing.

Description: This "Tulox" TT seamless plastic



tubing is now available in all diameters up to 2 in. OD. Within the next few weeks the range will be increased to 2½ in. OD. to meet requirements of war production.

Extruded from Tennessee Eastman cellulose acetate butyrate, this tubing is available from warehouse stocks throughout the country through Crane Co., Chicago, and Julius Blum & Co., Inc., New York City.

■ ■

Catalytic Assembly

Burrell Technical Supply Co., Burrell Bldg., Pittsburgh, Pa.

Model: Catalytic Assembly.

Application: To provide a faster, safer, more accurate method for the determination of the combustible components usually determined in the slow combustion pipette.

Description: The new Burrell catalytic assembly substitutes a catalyst tube for the slow combustion pipette. Instead of employing the slow combustion method with its attendant hazards and slow technique, the gas mixture is passed comparatively rapidly through a heated catalyst tube; oxidation is completed in just a few passes. The manipulating technique is reduced to a simplicity which saves a substantial amount of time, increases accuracy and permits an inexperienced operator to proceed without the practice required by the slow combustion method.

This Burrell assembly is available for installation on Burrell Build-up Gas Analysis Apparatus, as well as on the new Victory models.

Catalogs

• D. W. Haering & Co., Inc., Chicago, Ill., has issued a new fourth edition of the booklet on "Organic Methods of Scale and Corrosion Control." The edition is largely rewritten and enlarged to accommodate additional information. The 28-page booklet discusses organic methods and presents the newest information on scale and corrosion control. In addition to the discussion of organic chemicals, the new edition includes an explanation of causes of scale and corrosion and introduces a new section tabulating the physical and chemical properties of various gluecosates developed by Haering Research. The booklet may be obtained without charge by addressing D. W. Haering & Co., Inc., 205 Wacker Drive, Chicago, Ill.

■ ■

• Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Pa., has issued an entirely new, 29-page catalog entitled, "Micromax Electric Control." It describes control equipment capable of handling any process which can be controlled by positioning a valve or other regulating device. Diagrams and text explain in detail how the equipment is adjusted to fit the needs of a particular process. A number of pictures show the equipment in actual use in a wide variety of applications.

Carboseal Anti-Leak

Gas company superintendent reports, "evermounting beneficial results."

A GAS company changed over from the distribution of wet manufactured gas to dry gas and later discovered considerable leakage in the bell-and-spigot joints of its gas mains. To stop the leaks, the joints in part of the system were recaulked . . . without success. The company later excavated through pavement on this part of the system . . . an expensive job . . . and clamped the joints.

On another part of the system the company superintendent then experimented with CARBOSEAL Anti-Leak, a liquid that swells the joint packing approximately 44 per cent in volume. Leakage was stopped. Three years later a recheck was made on the treated mains to determine the permanence of the Anti-Leak treatment. *On 4,000 feet of treated main, 65 previously reported leaky joints were tight and no other leaks were in evidence.*

The company now makes it a practice in all its dry-gas systems to treat bell-and-spigot mains with CARBOSEAL Anti-Leak before street paving. To date, 20,000 feet of 4-inch main, 10,000 feet of 6-inch main, and 5,000 feet of 8-, 10-, and 12-inch main have been treated. The company superintendent reports: "We are satisfied that this method of main treatment is effective and the program can be continued with evermounting beneficial results."*

If you have a leakage problem in bell-and-spigot joints, in a dry-gas system, use CARBOSEAL Anti-Leak. It may solve your problem as successfully as the problem was solved for this company. For further information write for the book, "Correcting Leakage in Gas Distribution Systems with CARBOSEAL Anti-Leak."

*Reprints of the superintendent's article are available.

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York, N. Y.

"Carboseal" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

Free Appliance Repair Plan

THE officials of the Citizens Gas & Coke Utility of Indianapolis, Ind., announced the inauguration of a "Free Appliance Repair Plan" for the duration of the war, designed to furnish a very necessary service to gas consumers, according to George A. Saas, advertising manager of the utility.

The Citizens Gas & Coke Utility's "Free Appliance Repair Plan" has back of it these two thoughts: (1) the recognition of a responsibility to assist consumers in making their gas appliances last for the duration of the war, and (2) the appreciation of the bald fact that gas is only as good as the appliance that burns it.

A careful review and estimate of appliance work orders for the past year disclosed all the costs involved. An estimate of manpower available to do this job gave the figures on the maximum number of such free appliance repair orders that can be handled. Thus it was possible to estimate in advance what this plan is apt to cost. Considering the valuable service rendered consumers through the successful operation of this plan and the consequent good will gained, it was decided that the expenditure involved was worth the results.

The plan was started and put into actual operation 30 days before any announcement was made in the newspapers to enable the utility's distribution department to clear its files of pending work orders and thus eliminate the possibility of charging a customer for such service one day and offering to do the work free the next. The plan is simple in its set-up and operation:

1. Consumers are told that because gas appliance manufacturers are now entirely in war production it is of paramount importance to keep their present appliances in operating condition. They were told that the gas utility, as a patriotic responsibility, will help them do this.

2. It was announced that the gas utility will make an inspection, adjustment and any necessary repairs, involving labor only, at no cost to the customer.

3. In case repair material or parts are required to effect a repair, such material or parts will be ordered from the respective manufacturers on the customer's behalf and billed to him at actual cost. Installation of the part, when it arrives, will be made free of any labor charge.

4. This applies to any domestic gas appliance, no matter from whom it may have been purchased. It is also stressed that these calls will be made on regularly scheduled routes as the gas utility gets to them, and the customers are asked to be patient and thus enable the working out of a schedule in such manner as to save the maximum of rubber, gasoline and manpower.

5. A copy of the first ad announcing the "Free Appliance Repair Plan" and a letter has been sent to all gas appliance dealers in Indianapolis to acquaint them with the plan.

Service men carry with them a printed 3x5 survey card on which it is possible to check the condition, type and age of appliances in the customer's home, thus furnishing possible leads for post-war sales activity.

Citizens Gas & Coke Utility officials stated: "We believe that this free appliance repair plan will not only materially assist in the war effort on the home front, but also build a substantial amount of good will at a time when labor shortages make it increasingly difficult for a householder to effect repairs of any kind in his home." The Citizens Gas & Coke Utility's free appliance repair plan went into effect on March 20, 1943, and was to be advertised to the public on April 20.

■ ■

American Cast Iron Pipe Wins "E" Award

Men and women of the American Cast Iron Pipe Co., Birmingham, Ala., received the Army-Navy "E" award on March 24 in recognition of their exceptional performance in supplying war material for America's fighting forces.

The award was formally presented by Col. Ernest C. Bomar, district chief, Birmingham Ordnance District, at ceremonies held in the Service Building auditorium at Acipco. W. D. Moore, president of the company, accepted the emblem on behalf of the management and employees. Presentation of award pins to employees was made by Lieut. Commander Edwin Phillips, commander, naval training school, Auburn, Ala., and they were accepted for white employees by Don C. Williams and for Negro employees by Norman Randall.

■ ■

Canadian Gas Sales For January Tabulated

The Canadian Gas Association has received the following figures from the Dominion Bureau of Statistics covering the sale of natural and manufactured gas in Canada during January, 1943:

Natural gas sales during January amounted to 3,824,935 Mcf., of which 2,088,743 Mcf. was for domestic use, 1,031,255 Mcf. for commercial use, 657,223 Mcf. for industrial use, and 47,714 Mcf. for other uses.

★

We're All in the Same Boat

★

You understand why we have stopped production of Klixon Gas Valves. Like all manufacturers who possibly can, all of our manufacturing and engineering facilities are devoted to turning out better and more equipment—to get this war over with **soon.**

Spencer Thermostat Company

803 Forest Street
Attleboro, Mass., U. S. A.

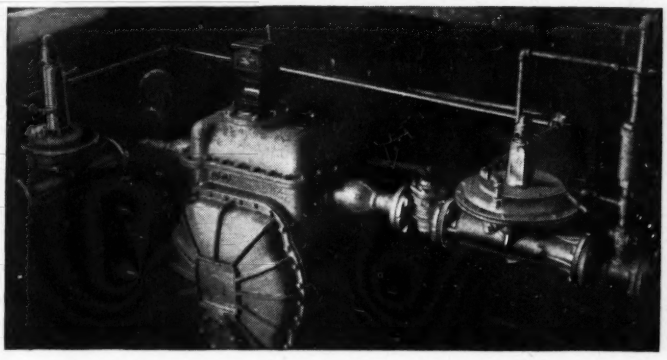
KLIXON

Payne FURNACE & SUPPLY CO., INC., BEVERLY HILLS, CALIFORNIA

Operating Conditions vary but

REYNOLDS REGULATORS

meet every Gas Control Demand



(Photograph of actual plant installation)

American Industry is meeting the challenge of production. War is a jealous Master. Increased production is a matter of success or failure—of victory or defeat. In the matter of Gas Control, Reynolds has the answer to every industrial need.

REYNOLDS offers greater Capacity—Increased Range—Quicker Response—all features of Reynolds Gas Regulators for Industrial Control. They assure smooth, constant outlet pressure and volume. Manufactured in single or double valve construction, Reynolds Industrial Regulators are proved by performance in factory tests and on installations throughout the world.

REYNOLDS' cooperation in solving Gas Control Problems is always available. Write.

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

Branch Offices

423 Dwight Building
Kansas City, Missouri

2nd Unit,
Santa Fe Building
Dallas, Texas

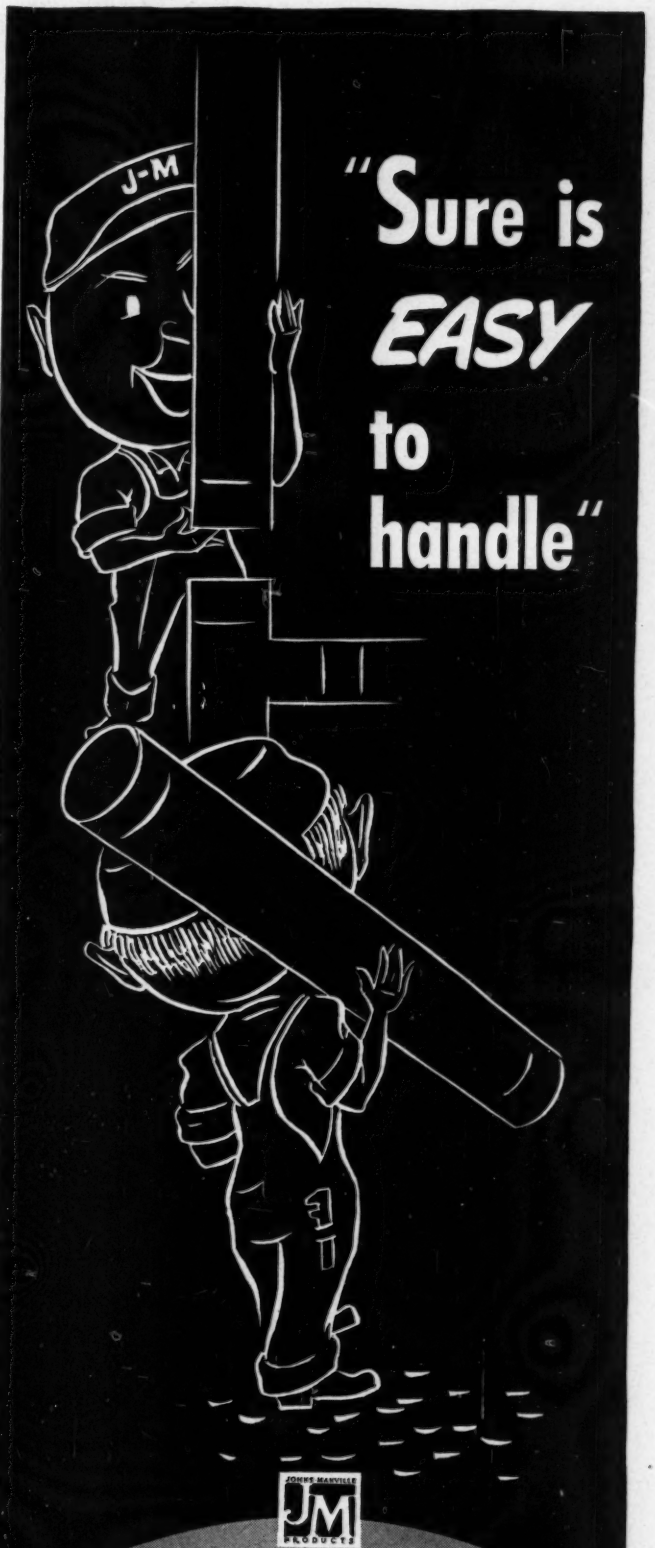
Representatives

Eastern Appliance Company
Boston, Massachusetts

Wm. A. Ehlers
No. 268 Park Street
Upper Montclair, N. J.

Gas Control Since 1892

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.



JOHNS-MANVILLE JM PRODUCTS

Johns-Manville
TRANSITE FLUE PIPE
AN ASBESTOS PRODUCT
For venting gas-burning appliances

Maintenance of Measuring Station Yards

In 1940 the management of the Lone Star Gas Co., Dallas, Texas, decided to try the experiment of employing local citizens in the various towns served by the company on an individual contract basis to maintain the grounds around measuring station yards. Accordingly, responsibility for this work was transferred January 1, 1941, from the pipe line department, which had previously handled this maintenance with its own crews, to the inspection and structure maintenance department. As supervisor of this latter department, J. A. Martin was in close contact with the progress of the experiment and has written this report of the first season's operation.—Editor.

AT THE start of the year 1941, when the management assigned the job of measuring and regulating station yard maintenance to this department, with instructions to do this work where it was practical and economical by obtaining local contracts, our first thought was that we were going to get to play "Grocery Store." But on reflection it became evident that while individually each transaction was "small potatoes," the aggregate assumed large proportions; and further, that due to the numerous jobs to be contracted, the territory involved, and the limited time economically available to locate parties who would be interested in contracts necessarily so unattractive from a monetary standpoint, it was going to take a bit of doing.

The Lone Star system is divided into 15 pipe line districts, and for easier handling each district is subdivided into divisions. The inspection department has six crews, consisting of an inspection crew foreman with four inspectors to each crew. Each crew is assigned a territory conforming to the pipe line districts and divisions. The crews make a round of their territory every three months.

Our first step on the new assignment was to instruct each inspection crew to catalog every station yard in their territory as to size, number of feet of hedge or shrubs that would need trimming, how much of the lot was grass, and any other item which might enter into contracting the yard. We combined the record of each crew, listing them according to divisions of districts. Our idea in this was to eventually arrive at a set pay rate per square of lawn or foot of hedge, etc. This proved to be so much wasted effort, as it developed that this type of contracting was pure "hoss trading" with the widest range of bids ever known. The several crew foremen gained or lost the honors according to their bargaining ability and then took their "ribbing" according to their due.

Since this type of contracting was foreign to our experience and since it must be accorded the same formality as contracts of greater import, a special contract form was devised and approved by the legal department, together with a minor's release, if the job was given to a minor.

The pipe line department, which had previously maintained the yards, was consulted, and it was the option of each district foreman to retain what yards close to headquarters it was practical for his forces to maintain.

The inspection foremen were then furnished a list of the station yards remaining to be contracted, together with contract forms, minors' releases, and instructed to obtain bids. The inspection foremen were also furnished a list of the station yards to be maintained by the district pipe line foremen, with instructions for the inspectors to render whatever assistance they could in passing.

It was amazing how quickly and easily the inspection foremen obtained bids from local residents. Only in a few cases did stations revert to pipe line department for yard maintenance due to our inability to obtain satisfactory bids. The bids were mailed to this office and if accepted was assigned a contract number, and we wrote the successful bidder a letter of acceptance, attaching a copy of the contract, and enclosing a key to fit a secondary lock placed on the yard gate previously by the inspection foreman, which would admit the contractor to the yard but not to the building. We also enclosed blank invoice forms for the contractor to submit for payment that were designed to reduce to a minimum the number of vouchers to be issued and yet not be too much of an imposition on the contractor in regard to waiting for payment. They also needed to be acceptable to the accounting department as an authoritative instrument on which to issue checks, the accounting department having been given copies of all the contracts, which they accepted without too much enthusiasm.

The biggest problem was supervision and payment of the contracts. We dealt with 96 different contractors who took care of some 146 station yards. No direct supervision could be maintained on all the contractors, but with the help of our inspectors on their rounds, and with the assistance of the district pipe line foremen and the me-

LARGE DIAMETER PIPE and FITTINGS, including 48-inch

Acipco Cast Iron Pipe and Fittings are available in sizes including 48". Acipco Large Diameter Pipe are made by the Mono-Cast Centrifugal Process and conform to the latest A. S. A. standards.

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM, ALABAMA
Sales Offices in Principal Cities

SEMET-SOLVAY ENGINEERING CORPORATION

Blue Gas Plants — Gas Purifiers
Water Gas Machines — Condensers
Washer Coolers — Waste Heat Boilers
Naphthalene Scrubbers — Producer Gas Plants

40 RECTOR STREET, NEW YORK, N. Y.

ter and regulator inspectors, and by the use of the invoice forms, together with our record system, we were able to get a fairly accurate picture of what was going on. The time period of the contract ran from April 1 to October 1, and the contractor was to be paid at two-month intervals. On completion of two months' work, the contractor would mail the invoice for payment stipulated in the contract, and if no contrary report had been received from sources outlined above, we approved the invoice and passed it to the accounting department for payment.

We had a few contracts which for various reasons were cancelled. But in every case we had very little difficulty in getting one of the other contractors in that locality to take over.

As a preparatory measure, in case the experiment warranted continuance of this method of yard maintenance, a questionnaire was sent to each contractor to send in with his last invoice. The response to this questionnaire was practically 100%. In fact, all but one contractor answered.

Four questions were asked: 1. Was the schedule under which you maintained the yards on your contract OK? If the answer to the above question is "No," please state below when work should be started and how often yards should be worked on to maintain a satisfactory appearance. 2. Do you have any other suggestions in regard to work or to improve appearance of yard? 3. Splitting the payments on the contracts at two-month intervals was decided upon mainly due to the large number of contracts to be handled and to simplify bookkeeping. Is this method of payment satisfactory to you? 4. Would you be interested in another contract for the 1942 season? If answer is "Yes," would you be interested in contracting for other stations in neighboring towns if satisfactory routing could be arranged and if so, how many could you take care of?

The answer to question No. 1 was generally "Yes" for a normal year (1941 season was an abnormally wet year on our system). Question No. 2 should have been left out, as some of the suggestions were no less than fabulous, but it at least indicated an unexpected pride in workmanship. Answer to question No. 3 indicated the majority were satisfied with the payment schedule, and the others were able to make out on it. As to question No. 4, in nearly every case, to our surprise, the contractor expressed his desire for another contract next season.

In summarizing, having run a cost comparison at the close of the season, we found that our experiment was highly successful from a cost standpoint, but before coming to definite conclusions we contacted the district pipe line foreman for a report on the individual workmanship of the contractors in his district. Combination of these reports showed 72½% of the contractors did satisfactory work, 3½% were fair, and 24% were unsatisfactory.

This was considered good enough to warrant another trial, and by passing the information on to the inspection crew foremen, they were enabled to weed out the unsatisfactory contractors, and we expect a higher percentage of satisfactory work this season.

Minneapolis Rate Scale Reduced for Eighth Time

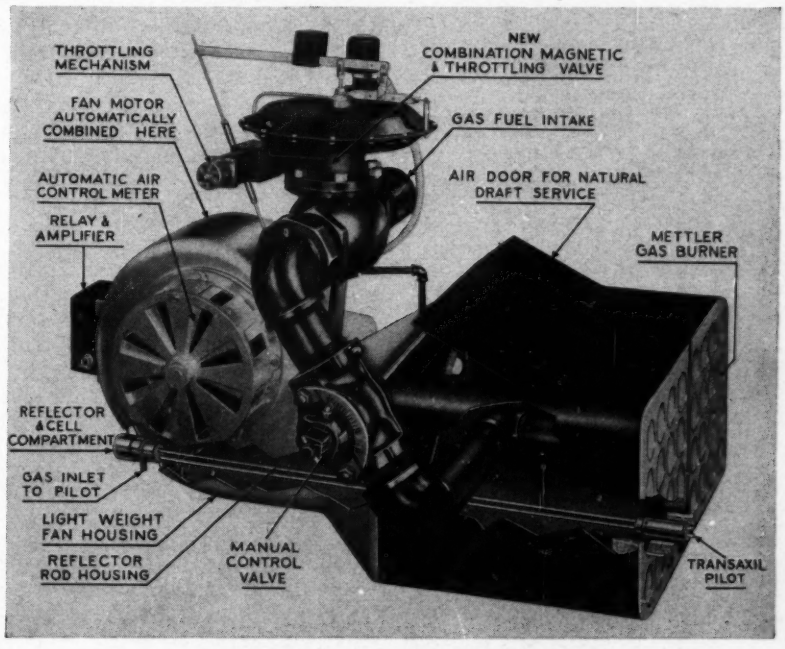
Recent action of the Minneapolis City Council has made it possible for the Minneapolis Gas Light Co., Minneapolis, Minn., to announce another reduction in the general service rate for all gas uses in that city. The new rate schedule, the eighth since 1937, will save citizens $302,000 annually.

A comparison of domestic rates from 1937 to 1943 is as follows:

1937	1943
$1.00—First 400 cu. ft.	$1.00
1.05—Next 1100 cu. ft.	.85
1.03—Next 2000 cu. ft.	.75
.99—Next 31,000 cu. ft.	.70

METTLER "FAN-AIR" BURNERS

MECHANICAL DRAFT GAS BURNERS WITH THE NEW "TRANSAXIL" SAFETY PILOT AND TRIPLE CONTROLS



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FAN-AIR and "TRANSAXIL" ATTRIBUTES

1. A complete automatic burner system, ready for installation.
2. Requires less stack—more capacity from minimum furnace volume.
3. Quiet performance—dependable electric and throttling fuel control.
4. 100% turndown ratio—highest efficiencies and no vibration.
5. "TRANSAXIL" the new Mettler patented flame guard safety pilot.
6. " provides instant fuel shutoff upon flame failure.
7. " pilot non-combustible—assuring greatest safety factor.

The fan-air burner assembled with "Transaxil" or bimetallic safety pilot enables small plant owners to have advantages and benefits of a fully automatic mechanical draft burner system at moderate cost.

Sizes 5 to 300 H.P.

Ample Stock of Both Fan-Air or Natural Draft Burners for Prompt Shipment

Details on Request

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406 South Main Street
LOS ANGELES CALIFORNIA

PCGA Idea Contests on Appliance Design

IN ORDER to tap the reservoir of knowledge on gas appliances accumulated over the years by gas company employees, the Pacific Coast Gas Association is sponsoring three "Idea" contests to bring out suggestions which will be useful to manufacturers in the design of appliances in the post-war period, according to an announcement by Clifford Johnstone, managing director of the association.

One of the contests is being sponsored by the association's women's committee and is designed specifically to bring out ideas for improving the gas range. This contest, which is under the direction of Gladys Warren, home service director, San Diego Gas and Electric Co., is open to all women employees of any member gas company, except those engaged in home service and appliance counselor activities. Specific questions on the gas range directed to women contestants are:

1. How would you arrange or rearrange the cooking facilities, including oven, broiler, and top burners of the modern gas range to make the range more convenient?

2. Can you think of any additions that might be made in the controls and accessories, including thermostat, oven clock control, pilots and the "gadgets" of a modern gas range that might be made to improve it?

3. Does the appearance of the modern gas range fit into your ideal dream kitchen? If not, how would you change it to make it fit into that kitchen?

Gladys Warren

W. M. Jacobs

The other two divisions of the contest are being conducted with the sponsorship of PCGA's post-war appliances committee under Chairman W. M. Jacobs, general superintendent of sales, Southern California Gas Co. One section of this contest is aimed at the service and operating men, the second to the home service and sales staff.

The contest will close April 30 and prizes in war bonds and stamps will be awarded to winners by PCGA. Several of the member companies are conducting parallel contests to be separately judged and with separate prize awards.

Contest supervisors in the PCGA member companies are: Archie W. Boddeley, sales supervisor, Seattle Gas Co.; D. L. Scott, supervisor of publications, Southern California Gas Co.; C. H. Potter, new business manager, Southern Counties Gas Co.; A. J. Anderson, district manager, Pacific Gas & Electric Co., San Francisco; C. W. Steel, Portland Gas & Coke Co.; E. H. Adler, industrial sales engineer, San Diego Gas & Electric Co., and E. J. Ludeman, Washington Gas & Electric Co., Tacoma.

■ ■

United Gas Ad Series

"This Is America" is the theme of a series of institutional ads being released by the United Gas Corp., Houston, Txeas. The purpose of the ads is to interpret to Americans just what this nation means in terms of the freedoms they enjoy and for which Americans fight. The ads depict scenes of American home life from gardening in the back yard to gossiping with the neighbors at the corner store. The freedom to worship unafraid is another heritage which is brought out in the United Gas ad series.

T. H. Hawkins is advertising manager of United Gas Corp. and Bozell & Jacobs is the advertising agency which prepared the copy.

Seventeen Students Given Institute Fellowships

SEVENTEEN students, two more than usual, have been named to receive fellowships at the Institute of Gas Technology at Illinois Institute of Technology, Director Harold Vagtborg has announced. The 17 men will begin training for advanced degrees in gas technology.

The appointees represent 14 colleges in 10 states and were chosen from among nearly 150 candidates interviewed at 37 schools.

Graduates in chemistry and chemical engineering, the students will receive an annual stipend of $1135 to cover expenses during their study at the Gas Institute. During the summer they will be employed in the gas industry as a part of the required curriculum.

The work in connection with the appointment of the fellows was directed by Dr. Lincoln R. Thiesmeyer, student counselor at the Gas Institute. He reports that the 17 fellows are outstanding in scholarship, 10 of them ranking first in their graduating classes. Among them, the fellows hold 49 memberships in honorary scholastic and professional organizations.

The appointees, their home towns, and the schools from which they come are:

Rex T. Ellington, Jr., Gunnison, Colo., University of Colorado; Arthur J. Fry, Dodson, Mont., Montana State College; Richard R. Haig, Swarthmore, Pa., University of Rochester; Roger V. LeClerc, Portland, Ore., Washington State College; Robert S. Levine, Des Moines, Iowa, Iowa State College; Milton Lewis, Seattle, Wash., University of Washington; Eugene H. Luntey, Buhl, Ida., University of Idaho; Lewis H. Mahony, Jr., Denver, Colo., University of Denver; Randolph W. Mason, Hagerstown, Md., University of Rochester; Richard F. Messing, St. Paul, Minn., University of Minnesota; Edward A. Pirsh, Ely, Minn., University of Minnesota; Walter R. Schwandt, Manchester, Iowa, Iowa State University; George A. Smalley, Cascade, Ida., University of Idaho; Chapin W. Smith, Seattle, Wash., Williams College; David J. Smith, Indianapolis, Ind., Wesleyan University; Allen N. Webb, Manhattan, Kan., Kansas State College; and John M. Woods, Wichita, Kan., University of Kansas.

Final acceptances have not been received from Mr. Haig, Mr. Mason and Mr. Smith.

■ ■

Plans for Santa Maria Field Project Completed

Southern Counties Gas Co., Los Angeles, has completed plans for the $100,000 construction of facilities to take an additional 8,000,000 cu. ft. of natural gas daily from the Santa Maria field in Santa Barbara County, Calif. According to Executive Engineer F. A. Hough, this increase of gas will exceed the local demand and make the field a source of supply for the entire system.

Southern Counties has let a contract covering the construction of approximately 28,800 ft. of 8-in. and 10-in. pipeline and will, at a later date, ask for bids from contractors on a dehydration plant designed by N. K. Senatoroff of the company.

Union Oil Co., which, with Pacific Lighting Corp. and Southern Counties Gas Co., is undertaking the entire project, is at present constructing a gasoline extraction plant at a cost of approximately $500,000.

■ ■

New Gas Field Tested

Evidence of a new gas field in the Centrahoma area, Coal County, Okla., was seen Feb. 12 when the Amerada and Standolind No. 1 Cushing Royalty showed an estimated 25,000,000 cu. ft. daily on a drill stem test.

HIGHWAY OF NATURAL GAS FROM FIELD TO INDUSTRY . . .

. . . THE PIPE LINE

Houston Pipe Line Company has prepared itself for years for just such natural gas demand as exists today on the Texas Gulf Coast. Its far-flung pipe line system is strategically located across the length and breadth of the Texas Gulf Coast, serving countless new industries that have sprung up in recent years. This ability to serve these important industries without delay, due to long-range planning, is an important phase of this region's war production achievements.

After the locating of a prospective gas well, the drilling of it, and the processing and controlling that must take place, natural gas still must be transmitted to industrial centers. This all-important fourth step is the function of the pipe line, that highway of natural gas from gas field to the fires of industry. Today's modern ditching machines prepare in a day what once took weeks for "muckers" to do with pick and shovel. Today's modern welded steel mains are a vast improvement over the old-time pipe lines with countless joints and connections. Modern welded steel mains permit the transmission of more gas at higher pressures, an important feature as the demand for natural gas has grown to astronomical proportions here on the Texas Gulf Coast.

Houston Pipe Line Company's ability to serve is backed by its dependable supply of natural gas from many Gulf Coast fields, by trained personnel, modern equipment, financial stability, and by an eighteen-year record of unfailing service. Its Research Department is in a position to furnish facts and figures about this region's many advantages and resources to those firms even now looking ahead to the post-war expansion that is inevitable in this rich and rapidly expanding Texas Gulf Coast country. For this information, address your request to Research Department, Houston Pipe Line Company, Petroleum Building, Houston, Texas.

HOUSTON PIPE LINE CO.
Subsidiary of Houston Oil Company of Texas
GEO. A. HILL, JR., President
Wholesalers of Natural GAS

For More Than **20 YEARS**
"CLEVELANDS"
Have Been Delivering More Trench with Less Work and At Lower Cost On Hundreds of Pipeline Jobs.

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PUT "CLEVELANDS" ON YOUR WAR EMERGENCY PIPELINE JOBS—*Whether It's:*

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IN today's pipeline construction programs, Speed, Endurance, Low Cost operation and Service are the most essential machine requirements. That's why "CLEVELANDS" fit so perfectly into the picture and are preferred equipment on so many war and civilian emergency projects, current and recent.

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"CLEVELANDS" Save More . . . Because they Do More

Fixing Gas Price at Well

For the first time in the history of the state the Oklahoma Corporation Commission has been asked to fix prices of natural gas at the well. A hearing on an application of the Magnolia Petroleum Co. to have the commission fix the price at 5¢ per 1000 cu. ft. at the well in the Cement field has been scheduled.

Two entirely new elements enter into the case. One is the probable intervention of the OPA and the other is the question of authority of the commission to fix prices for natural gas at the well, Ray O. Weems, vice chairman of the commission, pointed out.

■ ■

GEORGE A. BURRELL

Consulting
Gas Engineer

■

Suite 1909
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Sioux Falls Natural Gas Rates Reduced

Reduction of natural gas rates in Sioux Falls, S. D., effective with meter readings taken on March 10 and thereafter, has been announced by the Sioux Falls gas division of the Central Electric & Telephone Co.

Under the new rate schedule, the 9000 customers of the company will save more than $70,000 annually, E. Clark Deane, district manager, said.

The reduction will apply to gas used for cooking, water heating and refrigeration and for space heating and industrial use.

R. A. Phillips, vice president and general manager of the Central Electric Co., pointed out that the rate reductions made during the last three years now bring savings of $105,000 annually to gas users in Sioux Falls.

The latest reduction followed the announcement of lower wholesale rates made by the Northern Natural Gas Co., Omaha, distributor. This is the third reduction here in gas rates in the last three years.

■ ■

WANTED

Gas Holders, Pumps,
Condensers, Coolers, Tanks,
Boilers, Buildings,
Pipe, etc.

Jos. Greenspon's Son Pipe Corp.

National Stock Yards
(St. Clair County), Illinois

Alberta Firm's Priorities Application Approved

Julian Garrett, general manager of Northwestern Utilities, Ltd., Edmonton, Alta., announces approval has been given by the War Production Board at Washington for the priorities application for United States material required in connection with this year's extension of the company's production and transmission system.

This latest action clears the way for the company to complete its orders in carrying out its seasonal program.

Recently the company announced its 1943 improvement program involved an estimated $360,000, a major part of which is laying of 12.8 miles of pipeline to complete the duplicating of the main line between Viking and Edmonton.

The company's program also includes enlargement of the 6⅝-in. pipeline immediately east of Kinsella field station to 10¾-in. for a distance of 1.7 miles; drilling of two more wells and one previously drilled.

■ ■

WANTED

PRESSURE VESSELS

Any size or type. Good for 50 lbs. or higher pressure. Wire, phone, or write. Give complete details and price.

▲

SONKEN-GALAMBA SUPPLY COMPANY

Tulsa, Oklahoma

Increased Gas Rates Asked By Indiana Utilities Corp.

A petition was filed by the Indiana Utilities Corp. with the Indiana Public Service Commission asking for an increase in rates for Corydon, Ind., consumers using over 3000 cu. ft. of gas a month.

According to the terms of the petition, the rate for from 3000 to 10,000 cu. ft. would be increased from 55¢ to 65¢ a 1000 ft. and from 10,000 to 30,000 ft. would be increased from 35¢ to 45¢. An industrial rate of 30¢ for more than 30,000 cu. ft. is also requested.

■ ■

Gas Potentials Being Taken

An engineering committee, headed by Elmer Capshaw, deputy Oklahoma conservation officer, started on Feb. 5 to take potentials on the 15 natural gas producers in the Medrano sand zone of the West Cement field. Such tests were ordered by the Oklahoma Corporation Commission recently.

Court Reverses FPC Ruling On Hope Natural Gas Case

THE Federal Power Commission order reducing rates of the Hope Natural Gas Co. for natural gas sold to the East Ohio Gas Co., the Peoples Natural Gas Co. and other Pennsylvania companies was reversed by a decision handed down by the United States Circuit Court of Appeals of the Fourth Circuit on Feb. 16.

The FPC order of May 26, 1942, reduced the rate to East Ohio from 36.5¢ to 29.5¢ and the rate to Peoples from 35.5¢ to 28.5¢. Rates to Fayette County Gas Co. and Manufacturers Light & Heat Co. were also reduced from 31.5¢ to 28.5¢. In directing the reduction the commission found a rate base of $33,712,000, ignoring all elements of price changes and limiting its finding to the legitimate cost of the property on a basis of the adjusted book cost. Depreciation was computed on the service life method.

Hope Natural Gas Co. based its court review on the following points: failure of the FPC to find the present fair value of the property and its disregard for change of price levels; refusal of the commission to include items of well drilling cost and overhead aggregated in excess of $17,000,000 by reason of the manner in which these costs were booked at the time of expenditure; and the fixing of accrued depreciation on the straight line service life method and the complete refusal to consider the present condition of the property.

In computing the rate base the commission had given no consideration to the rise in price levels occurring since the construction of a great portion of the company property. The court decision reaffirms the fair value rule and states that in the Hope Natural Gas Co. case the original investment cost cannot be taken alone as the present fair value because of the great changes in the price of labor and materials occurring over the 40 years during which the company has been constructing its property.

A rate of return of 6½% was approved.

■ ■

Copy of Annual Report for Employees in Armed Forces

Former employees of the Wisconsin Public Service Corp., Milwaukee, Wis., now on duty with Uncle Sam's forces in foreign lands, will not be deprived of their usual copy of their employer's "Annual Report." At least, extra assurance that their copies will reach them has been gained by printing a limited edition on Bible paper, the total weight with suitable envelope staying well within the recommended two-ounce limit. Except for the paper used, the edition is identical with the regular heavy paper copies.

This report for the year ended Dec. 31, 1942, contains a roll of honor of employees in the armed services and a special tribute to them.

■ ■

Disposal of 20 Million in Write-ups Ordered by FPC

The Federal Power Commission announced March 31 its order directing the Minnesota Power & Light Co., Duluth, Minn., to dispose of $20,806,900.98 in write-ups and other erroneous charges to plant account claimed by the company to represent bona fide cost incurred in acquiring the property. The utility concern was also ordered to prepare and submit to the commission, within six months, revised original cost studies of the amounts in its plant account other than disposed of by the March 31 order. This latter order is to conform with the requirements of the FPC Uniform System of Accounts.

Now . . . More Than Ever Before

GAS APPLIANCES AND INSTALLATIONS SHOULD BE RELIANCE PROTECTED

Save metal, manpower and rubber for the nation's War effort by protecting gas appliances and installations with Reliance Regulators. Their extra sturdiness and performance prolongs the life of all gas-burning equipment. Their efficient operation saves the manpower and rubber of costly service calls.

The originality in design and integrity of construction perfects Reliance Regulators that deliver correct and uniform outlet pressure regardless of wide fluctuations in the distribution line pressure.

When the unusual occurs, they can be serviced without removing them from the line. They are available in types and sizes to meet any condition. Reliance Regulators are made in weight, spring and pilot-loaded models for every conceivable application.

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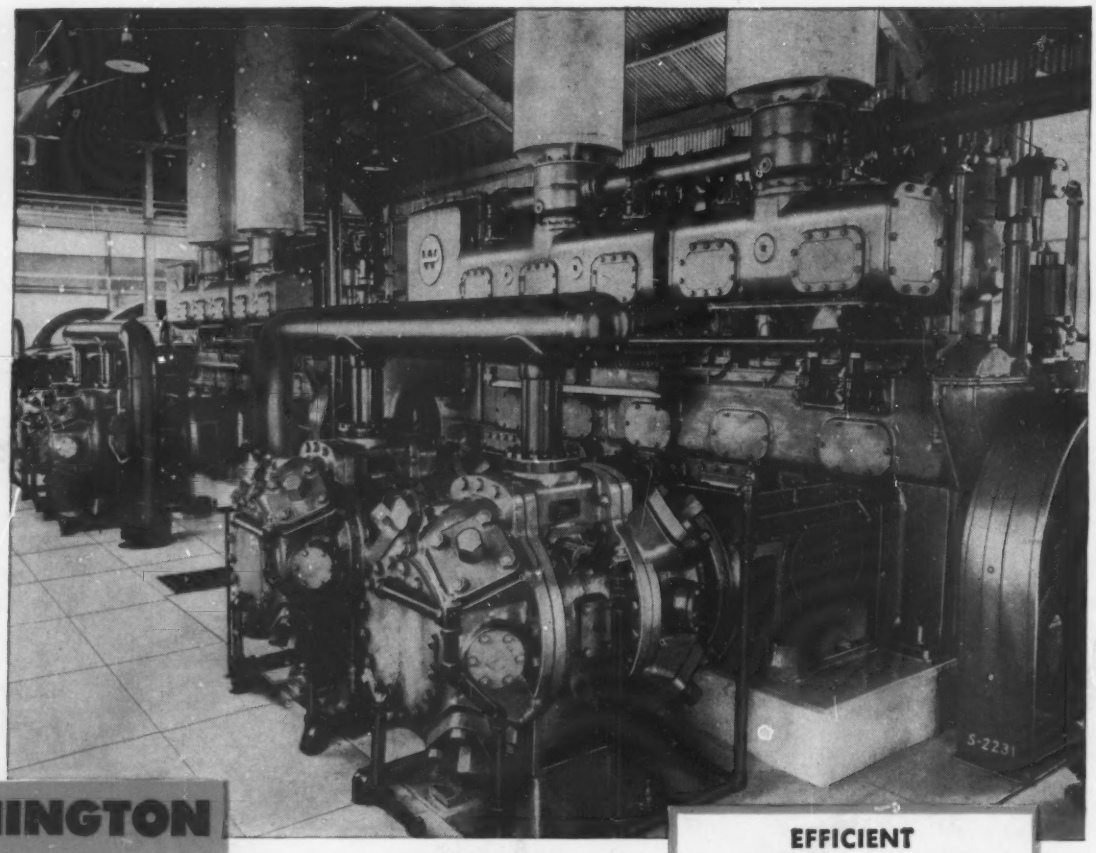

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IN THIS EQUIPMENT there is exemplified Worthington's half-century of research and experience in building compressors and internal combustion engines.

For refrigeration, air supply or gas compression, Worthington LTC units offer the solution to many major problems . . . by assuring uninterrupted operation over long periods, plus a term of life that is far beyond any current calculations.

Developed to meet the needs of the petroleum and gas industries, these LTC units are ready for other new and important war assignments.

FIVE SIZES . . . 400 TO 1000 HORSEPOWER

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EFFICIENT

- Twin ignition . . . Complete fuel combustion
- Pressure fuel injection . . . No waste to exhaust
- Feather valves . . . Quick acting, less slippage
- Large valve area . . . Higher efficiency

ECONOMICAL

- Low installation cost . . . Engine shipped completely assembled
- Low foundation cost . . . Small floor space
- Low building cost . . . Small cheap buildings adequate
- Low operating cost . . . In fuel and maintenance

DEPENDABLE

- Pressure lubrication . . . Reduces wear
- Low-tension ignition . . . Maintains spark intensity
- Gear drive . . . Positive timing for valves and ignition
- Complete combustion . . . Reduces operating temperatures

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